APPENDIX G: Noise Study

Available on the City of Twentynine Palms Website:

www.ci.twentynine-palms.ca.us

Yonder 29 Palms

NOISE IMPACT ANALYSIS

CITY OF TWENTYNINE PALMS

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LIST OF ABBREVIATED TERMS

(1)	Reference
ADT	Average Daily Traffic
ANSI	American National Standards Institute
Calveno	California Vehicle Noise
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
dBA	A-weighted decibels
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
INCE	Institute of Noise Control Engineering
L_{eq}	Equivalent continuous (average) sound level
L_{max}	Maximum level measured over the time interval
L_{min}	Minimum level measured over the time interval
mph	Miles per hour
OPR	Office of Planning and Research
PPV	Peak particle velocity
Project	Yonder 29 Palms
REMEL	Reference Energy Mean Emission Level
RMS	Root-mean-square
VdB	Vibration Decibels

EXECUTIVE SUMMARY

Urban Crossroads, Inc. has prepared this noise study to determine the potential noise impacts and the necessary noise mitigation measures, if any, for Yonder 29 Palms development ("Project"). The proposed Project consist of resort operating 24 hours a day with food and beverage services. The Project is anticipated to have up to 130-rooms. This study has been prepared to satisfy applicable City of Twentynine Palms standards and thresholds of significance based on guidance provided by Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (1)

The results of this Yonder 29 Palms Noise Impact Analysis are summarized below based on the significance criteria in Section 4 of this report. Table ES-1 shows the findings of significance for each potential noise and/or vibration impact under CEQA before and after any required mitigation measures.

TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS

Analysis	Report Section	Significance Findings	
		Unmitigated	Mitigated
On-Site Traffic Noise	7	*Less Than Significant*	-
Off-Site Traffic Noise	8	*Less Than Significant*	-
Operational Noise	10	*Less Than Significant*	-
Construction Noise	11	*Less Than Significant*	-
Construction Vibration		*Less Than Significant*	-

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1 INTRODUCTION

This noise analysis has been completed to determine the noise impacts associated with the development of Yonder 29 Palms ("Project"). This noise study briefly describes the proposed Project, provides information regarding noise fundamentals, outlines the local regulatory setting, provides the study methods and procedures for performing noise analysis, evaluates potential noise impacts from the project, and identifies mitigation measures to reduce impacts, as necessary.

1.1 SITE LOCATION

The Yonder 29 Palms Project is located on the southeast corner of Twentynine Palms Highway and Lear Avenue in the City of Twentynine Palms, as shown on Exhibit 1-A. The Project is located immediately south of Highway 62.

1.2 PROJECT DESCRIPTION

A preliminary site plan for the proposed Project is shown on Exhibit 1-B. The Project is proposed to consist of the development of a 150-acre glamping resort with a total of 130 units. Each room will be roughly 28 feet in length by 12 feet in width with a covered patio of equal dimensions. Additional amenities include food & beverage space, and a main lodge that could host special events. The main lodge will be 3,500 square feet that will operate as a retail space and resort lobby. Adjacent to the main lodge will be a separate feet food and beverage space of approximately 2,000 square feet. The main lodge area includes a fenced-in swimming pool and hot tub area. A 2,000 square foot secondary lodge with gathering areas and an outdoor patio surrounding a fenced-in pool will be located in the southeastern quadrant of the site. The Main Lodge, Food and Beverage Space, and Secondary Lodge will be open from 6:00 a.m. to 10:00 p.m. The engineering, maintenance equipment, and laundry facilities for operations will be located in the back-of-house area comprised of three buildings totaling 6,000 square feet in the southern western quadrant of the site. Employee housing structures will be provided within four structures, approximately 12,000 square feet. An outdoor movie Screen is planned near the main lodge. This screen will be approximately 16 feet tall with a seating area and would play family-friendly movies. The Project site is shown on Exhibit 1-A.

The on-site Project-related noise sources are expected to include air conditioning units, outdoor activities, music, an outdoor movie screen, trash enclosure activity, and parking lot activity. According to the project applicant, soft ambient background music will be played in the main and secondary lodge areas throughout the day from 6:00 a.m. to 10:00 p.m. on small satellite speakers. The outdoor movie screen will play family-friendly entertainment with the start and end times dependent on sunset. The audio for the outdoor movie area is broadcasted by personal FM radios or mobile apps. No central loudspeakers will be used on-site. This noise analysis is intended to describe noise level impacts associated with the expected typical operational activities at the Project site.

EXHIBIT 1-A: LOCATION MAP

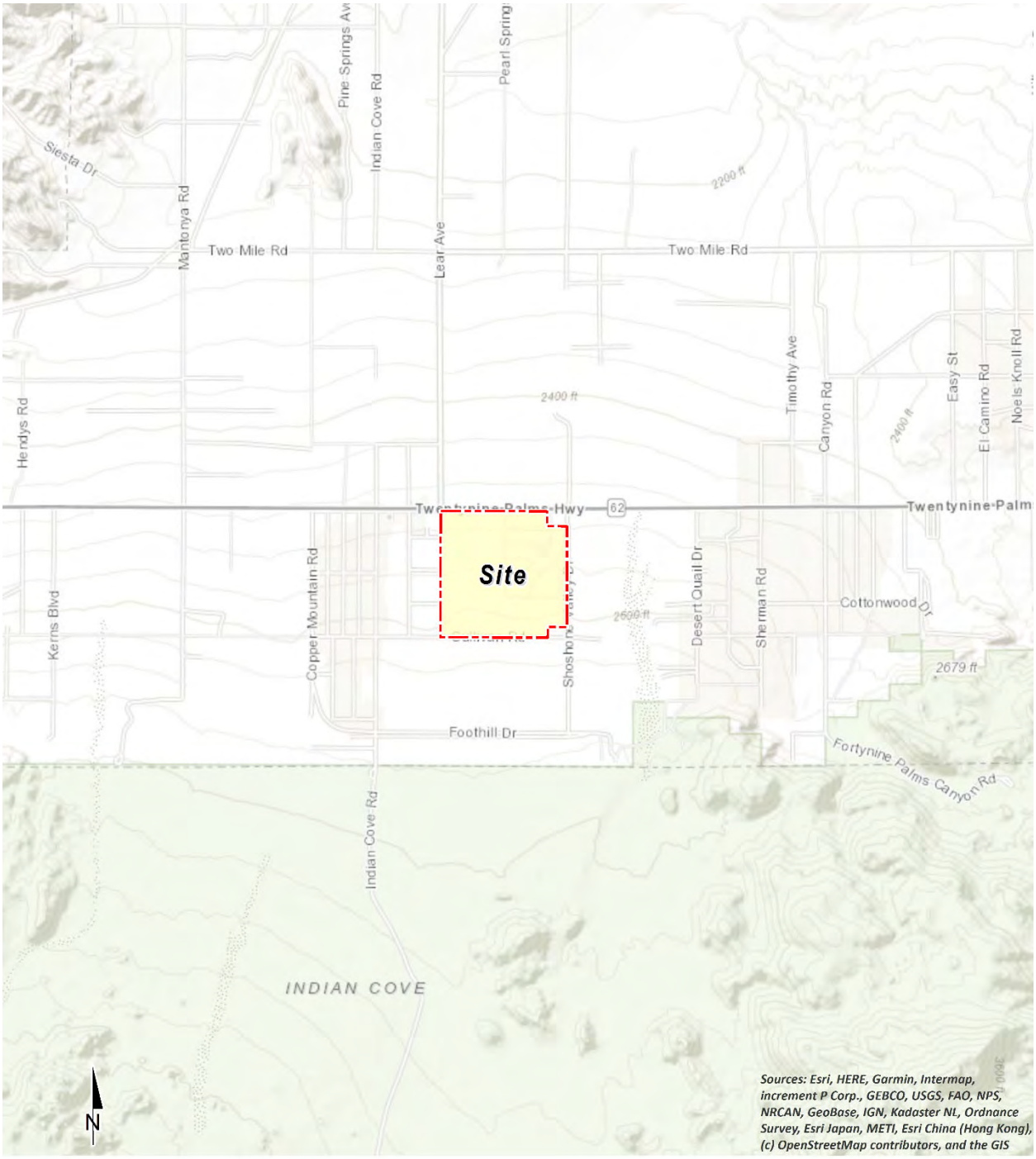
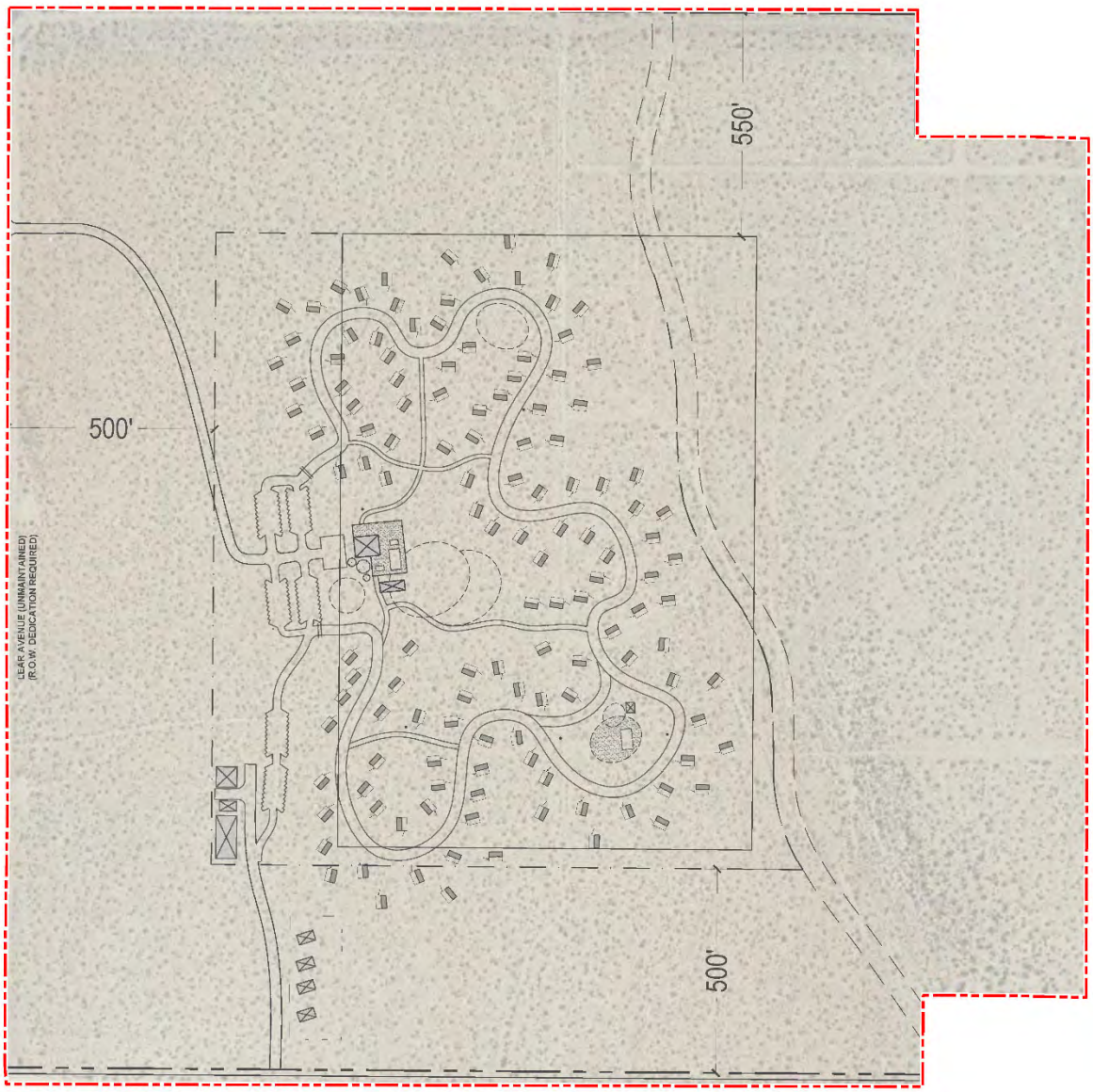


EXHIBIT 1-B: SITE PLAN



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2 FUNDAMENTALS

Noise is simply defined as "unwanted sound." Sound becomes unwanted when it interferes with normal activities, when it causes actual physical harm or when it has adverse effects on health. Noise is measured on a logarithmic scale of sound pressure level known as a decibel (dB). A-weighted decibels (dBA) approximate the subjective response of the human ear to broad frequency noise source by discriminating against very low and very high frequencies of the audible spectrum. They are adjusted to reflect only those frequencies which are audible to the human ear. Exhibit 2-A presents a summary of the typical noise levels and their subjective loudness and effects that are described in more detail below.

EXHIBIT 2-A: TYPICAL NOISE LEVELS

COMMON OUTDOOR ACTIVITIES	COMMON INDOOR ACTIVITIES	A - WEIGHTED SOUND LEVEL dBA	SUBJECTIVE LOUDNESS	EFFECTS OF NOISE
THRESHOLD OF PAIN		140	INTOLERABLE OR DEAFENING	HEARING LOSS
NEAR JET ENGINE		130		
		120		
JET FLY-OVER AT 300m (1000 ft)	ROCK BAND	110		
LOUD AUTO HORN		100	VERY NOISY	
GAS LAWN MOWER AT 1m (3 ft)		90		
DIESEL TRUCK AT 15m (50 ft), at 80 km/hr (50 mph)	FOOD BLENDER AT 1m (3 ft)	80		SPEECH INTERFERENCE
NOISY URBAN AREA, DAYTIME	VACUUM CLEANER AT 3m (10 ft)	70	LOUD	
HEAVY TRAFFIC AT 90m (300 ft)	NORMAL SPEECH AT 1m (3 ft)	60		
QUIET URBAN DAYTIME	LARGE BUSINESS OFFICE	50	MODERATE	
QUIET URBAN NIGHTTIME	THEATER, LARGE CONFERENCE ROOM (BACKGROUND)	40		SLEEP DISTURBANCE
QUIET SUBURBAN NIGHTTIME	LIBRARY	30	FAINT	NO EFFECT
QUIET RURAL NIGHTTIME	BEDROOM AT NIGHT, CONCERT HALL (BACKGROUND)	20		
	BROADCAST/RECORDING STUDIO	10	VERY FAINT	
LOWEST THRESHOLD OF HUMAN HEARING	LOWEST THRESHOLD OF HUMAN HEARING	0		

2.1 RANGE OF NOISE

Since the range of intensities that the human ear can detect is so large, the scale frequently used to measure intensity is a scale based on multiples of 10, the logarithmic scale. The scale for measuring intensity is the decibel scale. Each interval of 10 decibels indicates a sound energy ten times greater than before, which is perceived by the human ear as being roughly twice as loud. (2) The most common sounds vary between 40 dBA (very quiet) to 100 dBA (very loud). Normal conversation at three feet is roughly at 60 dBA, while loud jet engine noises equate to 110 dBA at approximately 100 feet, which can cause serious discomfort. (3) Another important aspect of noise is the duration of the sound and the way it is described and distributed in time.

2.2 NOISE DESCRIPTORS

Environmental noise descriptors are generally based on averages, rather than instantaneous, noise levels. The most used figure is the equivalent level (L_{eq}). Equivalent sound levels are not measured directly but are calculated from sound pressure levels typically measured in A-weighted decibels (dBA). The equivalent sound level (L_{eq}) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period (typically one hour) and is commonly used to describe the "average" noise levels within the environment.

To describe the time-varying character of environmental noise, the statistical or percentile noise descriptors L_{50}, L_{25}, L_8 and L_2, are commonly used. The percentile noise descriptors are the noise levels equaled or exceeded during 50 percent, 25 percent, 8 percent and 2 percent of a stated time. Sound levels associated with the L_2 and L_8 typically describe transient or short-term events, while levels associated with the L_{50} describe the steady state (or median) noise conditions. The relies on the percentile noise levels to describe the stationary source noise level limits. While the L_{50} describes the noise levels occurring 50 percent of the time, the L_{eq} accounts for the total energy (average) observed for the entire hour.

Peak hour or average noise levels, while useful, do not completely describe a given noise environment. Noise levels lower than peak hour may be disturbing if they occur during times when quiet is most desirable, namely evening and nighttime (sleeping) hours. To account for this, the Community Noise Equivalent Level (CNEL), representing a composite 24-hour noise level is utilized. The CNEL is the weighted average of the intensity of a sound, with corrections for time of day, and averaged over 24 hours. The time-of-day corrections require the addition of 5 decibels to dBA L_{eq} sound levels in the evening from 7:00 p.m. to 10:00 p.m., and the addition of 10 decibels to dBA L_{eq} sound levels at night between 10:00 p.m. and 7:00 a.m. These additions are made to account for the noise sensitive time periods during the evening and night hours when sound appears louder. CNEL does not represent the actual sound level heard at any time, but rather represents the total sound exposure. The City of Twentynine Palms relies on the 24-hour CNEL level to assess land use compatibility with transportation related noise sources.

2.3 SOUND PROPAGATION

When sound propagates over a distance, it changes in level and frequency content. The way noise reduces with distance depends on the following factors.

2.3.1 GEOMETRIC SPREADING

Sound from a localized source (i.e., a stationary point source) propagates uniformly outward in a spherical pattern. The sound level attenuates (or decreases) at a rate of 6 dB for each doubling of distance from a point source. Highways consist of several localized noise sources on a defined path and hence can be treated as a line source, which approximates the effect of several point sources. Noise from a line source propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of 3 dB for each doubling of distance from a line source. (2)

2.3.2 GROUND ABSORPTION

The propagation path of noise from a highway to a receiver is usually very close to the ground. Noise attenuation from ground absorption and reflective wave canceling adds to the attenuation associated with geometric spreading. Traditionally, the excess attenuation has also been expressed in terms of attenuation per doubling of distance. This approximation is usually sufficiently accurate for distances of less than 200 ft. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receiver, such as a parking lot or body of water), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface between the source and the receiver such as soft dirt, grass, or scattered bushes and trees), an excess ground attenuation value of 1.5 dB per doubling of distance is normally assumed. When added to the cylindrical spreading, the excess ground attenuation results in an overall drop-off rate of 4.5 dB per doubling of distance from a line source. (4)

2.3.3 ATMOSPHERIC EFFECTS

Receivers located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels. Sound levels can be increased at large distances (e.g., more than 500 feet) due to atmospheric temperature inversion (i.e., increasing temperature with elevation). Other factors such as air temperature, humidity, and turbulence can also have significant effects. (2)

2.3.4 SHIELDING

A large object or barrier in the path between a noise source and a receiver can substantially attenuate noise levels at the receiver. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Shielding by trees and other such vegetation typically only has an "out of sight, out of mind" effect. That is, the perception of noise impact tends to decrease when vegetation blocks the line-of-sight to nearest residents. However, for vegetation to provide a substantial, or even noticeable, noise reduction, the vegetation area must be at least 15 feet in height, 100 feet wide and dense enough to completely obstruct the line-of sight between the source and the receiver. This size of vegetation may provide up to 5 dBA of noise reduction. The Federal Highway Administration (FHWA) does not consider the planting of vegetation to be a noise abatement measure. (4)

2.3.5 REFLECTION

Field studies conducted by the FHWA have shown that the reflection from barriers and buildings does not substantially increase noise levels. (4) If all the noise striking a structure was reflected back to a given receiving point, the increase would be theoretically limited to 3 dBA. Further, not all the acoustical energy is reflected back to same point. Some of the energy would go over the structure, some is reflected to points other than the given receiving point, some is scattered by ground coverings (e.g., grass and other plants), and some is blocked by intervening structures and/or obstacles (e.g., the noise source itself). Additionally, some of the reflected energy is lost due to the longer path that the noise must travel. FHWA measurements made to quantify

reflective increases in traffic noise have not shown an increase of greater than 1-2 dBA; an increase that is not perceptible to the average human ear.

2.4 NOISE CONTROL

Noise control is the process of obtaining an acceptable noise environment for an observation point or receiver by controlling the noise source, transmission path, receiver, or all three. This concept is known as the source-path-receiver concept. In general, noise control measures can be applied to these three elements.

2.5 NOISE BARRIER ATTENUATION

Effective noise barriers can reduce noise levels by up to 10 to 15 dBA, cutting the loudness of traffic noise in half. A noise barrier is most effective when placed close to the noise source or receiver. Noise barriers, however, do have limitations. For a noise barrier to work, it must be high enough and long enough to block the path of the noise source. (4)

2.6 LAND USE COMPATIBILITY WITH NOISE

Some land uses are more tolerant of noise than others. For example, schools, hospitals, churches, and residences are more sensitive to noise intrusion than are commercial or industrial developments and related activities. As ambient noise levels affect the perceived amenity or livability of a development, so too can the mismanagement of noise impacts impair the economic health and growth potential of a community by reducing the area's desirability as a place to live, shop and work. For this reason, land use compatibility with the noise environment is an important consideration in the planning and design process. The FHWA encourages State and Local government to regulate land development in such a way that noise-sensitive land uses are either prohibited from being located adjacent to a highway, or that the developments are planned, designed, and constructed in such a way that noise impacts are minimized. (5)

2.7 COMMUNITY RESPONSE TO NOISE

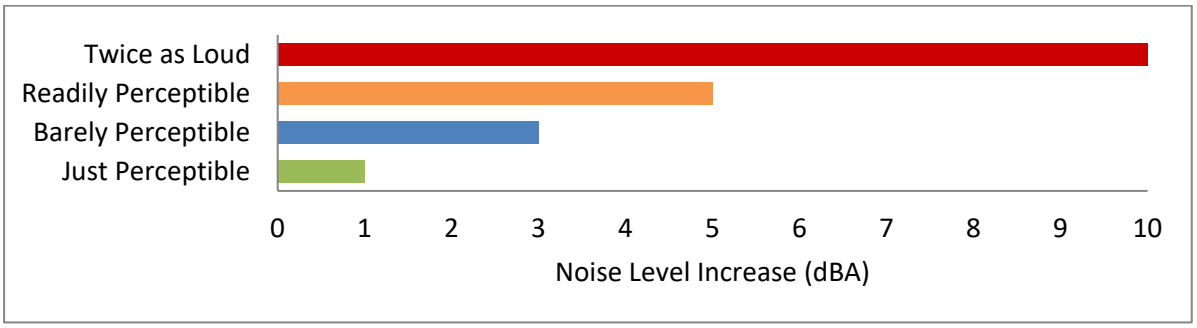
Community responses to noise may range from registering a complaint by telephone or letter, to initiating court action, depending upon everyone's susceptibility to noise and personal attitudes about noise. Several factors are related to the level of community annoyance including:

- Fear associated with noise producing activities;
- Socio-economic status and educational level;
- Perception that those affected are being unfairly treated;
- Attitudes regarding the usefulness of the noise-producing activity;
- Belief that the noise source can be controlled.

Approximately ten percent of the population has a very low tolerance for noise and will object to any noise not of their making. Consequently, even in the quietest environment, some complaints will occur. Twenty-five percent of the population will not complain even in very severe noise environments. Thus, a variety of reactions can be expected from people exposed to any given noise environment. (6) Surveys have shown that about ten percent of the people exposed to

traffic noise of 60 dBA will report being highly annoyed with the noise, and each increase of one dBA is associated with approximately two percent more people being highly annoyed. When traffic noise exceeds 60 dBA or aircraft noise exceeds 55 dBA, people may begin to complain. (6) Despite this variability in behavior on an individual level, the population can be expected to exhibit the following responses to changes in noise levels as shown on Exhibit 2-B. A change of 3 dBA are considered *barely perceptible*, and changes of 5 dBA are considered *readily perceptible*. (4)

EXHIBIT 2-B: NOISE LEVEL INCREASE PERCEPTION



2.8 VIBRATION

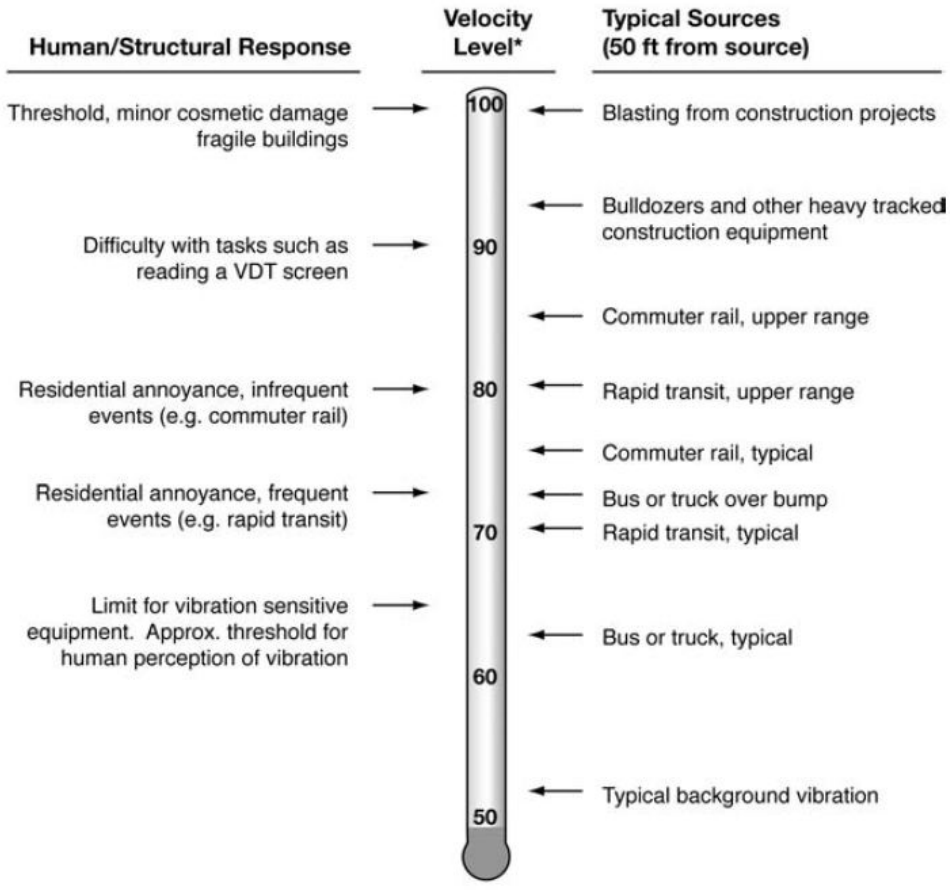
As defined in the Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment Manual* (7) and the California Department of Transportation (Caltrans) *Transportation and Construction Vibration Guidance Manual* (8), vibration is the periodic oscillation of a medium or object. The rumbling sound caused by the vibration of room surfaces is called structure-borne noise. Sources of ground-borne vibrations include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) or human-generated sources (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous, such as factory machinery, or transient, such as explosions or train pass-byes. As is the case with airborne sound, ground-borne vibrations may be described by amplitude and frequency. Groundborne vibration is primarily a concern inside structures, and is almost never a problem outside of structures (7). Additionally, ground-borne vibration generated by man-made activities typically attenuates rapidly with distance from the source of the vibration. Sensitive receivers for vibration include older stone, adobe, and masonry structures, places where people reside (especially residents, the elderly, and sick), and vibration-sensitive equipment and/or activities.

There are several different methods that are used to quantify vibrations. The peak particle velocity (PPV) in inches per second (in/sec) is the most common and is defined as the maximum instantaneous peak of the vibration signal. The PPV is the was developed primarily to describe vibration impacts to buildings and is not always the most suitable for evaluating human response to vibration because it takes some time for the human body to respond to vibration signals. Instead, the human body responds to average vibration amplitude often described as the root mean square (RMS) amplitude in in/sec. The RMS amplitude is defined as the average of the squared amplitude of the signal and may be more appropriate for describing the effect of

vibration on the human body. However, the RMS amplitude and PPV are related mathematically, and the RMS amplitude can be calculated from the PPV. The RMS amplitude is approximately 70% of the PPV (8).

While not universally accepted, vibration decibel notation (VdB) is used by the FTA in their guidance manual to describe vibration levels and provide a background of common vibration levels (9). As stated in the FTA guidance manual, the background vibration-velocity level in residential areas is generally 50 VdB. Ground-borne vibration is normally perceptible to humans at approximately 65 VdB. For most people, a vibration-velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels. Typical outdoor sources of perceptible ground-borne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the ground-borne vibration is rarely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration-velocity level, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings. Exhibit 2-C illustrates common vibration sources and the human and structural response to ground-borne vibration.

EXHIBIT 2-C: TYPICAL LEVELS OF GROUND-BORNE VIBRATION



** RMS Vibration Velocity Level in VdB relative to 10^{-6} inches/second*

Source: Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual.

3 REGULATORY SETTING

To limit population exposure to physically and/or psychologically damaging as well as intrusive noise levels, the federal government, the State of California, various county governments, and most municipalities in the state have established standards and ordinances to control noise. In most areas, automobile and truck traffic is the major source of environmental noise. Traffic activity generally produces an average sound level that remains constant with time. Air and rail traffic, and commercial and industrial activities are also major sources of noise in some areas. Federal, state, and local agencies regulate different aspects of environmental noise. Federal and state agencies generally set noise standards for mobile sources such as aircraft and motor vehicles, while regulation of stationary sources is left to local agencies.

3.1 STATE OF CALIFORNIA NOISE REQUIREMENTS

The State of California regulates freeway noise, sets standards for sound transmission, provides occupational noise control criteria, identifies noise standards, and provides guidance for local land use compatibility. State law requires that each county and city adopt a General Plan that includes a Countywide Plan which is to be prepared per guidelines adopted by the Governor's Office of Planning and Research (OPR). (10) The purpose of the Countywide Plan is to *limit the exposure of the community to excessive noise levels*. In addition, the California Environmental Quality Act (CEQA) requires that all known environmental effects of a project be analyzed, including environmental noise impacts.

3.2 CITY OF TWENTYNINE PALMS GENERAL PLAN

The General Plan is a tool for managing noise by planning for and maintaining compatibility between sensitive land uses and noise sources. (11) The Noise Element of the General Plan includes the following goal and implementation policies: (12)

Goal NS-1: Noise levels will be addressed prior to the City taking actions on land use proposals and potential conflicts will be avoided or mitigated so that noise levels will not exceed acceptable levels.

Implementation Policies

NS-1.1: Noise generation impacts will be considered prior to any land use designation change and/or any land use intensification and uses will be located in a manner that minimizes noise impacts. Prior to approval of projects, which may result in significant noise pollution, the City will require noise analysis to ensure that noise levels do not exceed acceptable levels as defined by the City's Development Code. The City will require special design standards for proposed projects with the potential to exceed the noise level requirements. In cases where special design standards are required, the City will require mitigation plans to be certified by a registered acoustician.

NS-1.2: The City will limit the establishment of land uses in the Twentynine Palms Airport flight pattern that would result in noise conflicts.

NS-1.3: Develop a buyer and renter notification program for the persons within the City limits locating under the Sundance Military Operations Area (MOA) airspace. This area experiences occasional high levels of aircraft activity and is bounded roughly by the Marine Base to the north, Indian Trail on the south, Canyon Road on the west and past the limits of the City to the east. The notification program should simply inform persons and businesses moving into that area that they will be exposed to occasional high levels of aircraft activity.

NS-1.4: Require all exterior noise sources (construction operations, air compressors, pumps, fans and leaf blowers) to use available noise suppression devices and techniques to bring exterior noise down to acceptable levels, as defined by the City's Development Code, that are compatible with adjacent land uses.

NS-1.5: Develop a buyer and renter notification program for the persons within the City limits that are determined to be affected by other noise generating uses on the Marine Base. The program shall include measurements of these occasional noise occurrences from other noise generating uses to determine the area impacted. The notification program should simply inform persons and businesses moving into that area that they will be exposed to occasional high levels of noise.

3.3.1 LAND USE COMPATIBILITY

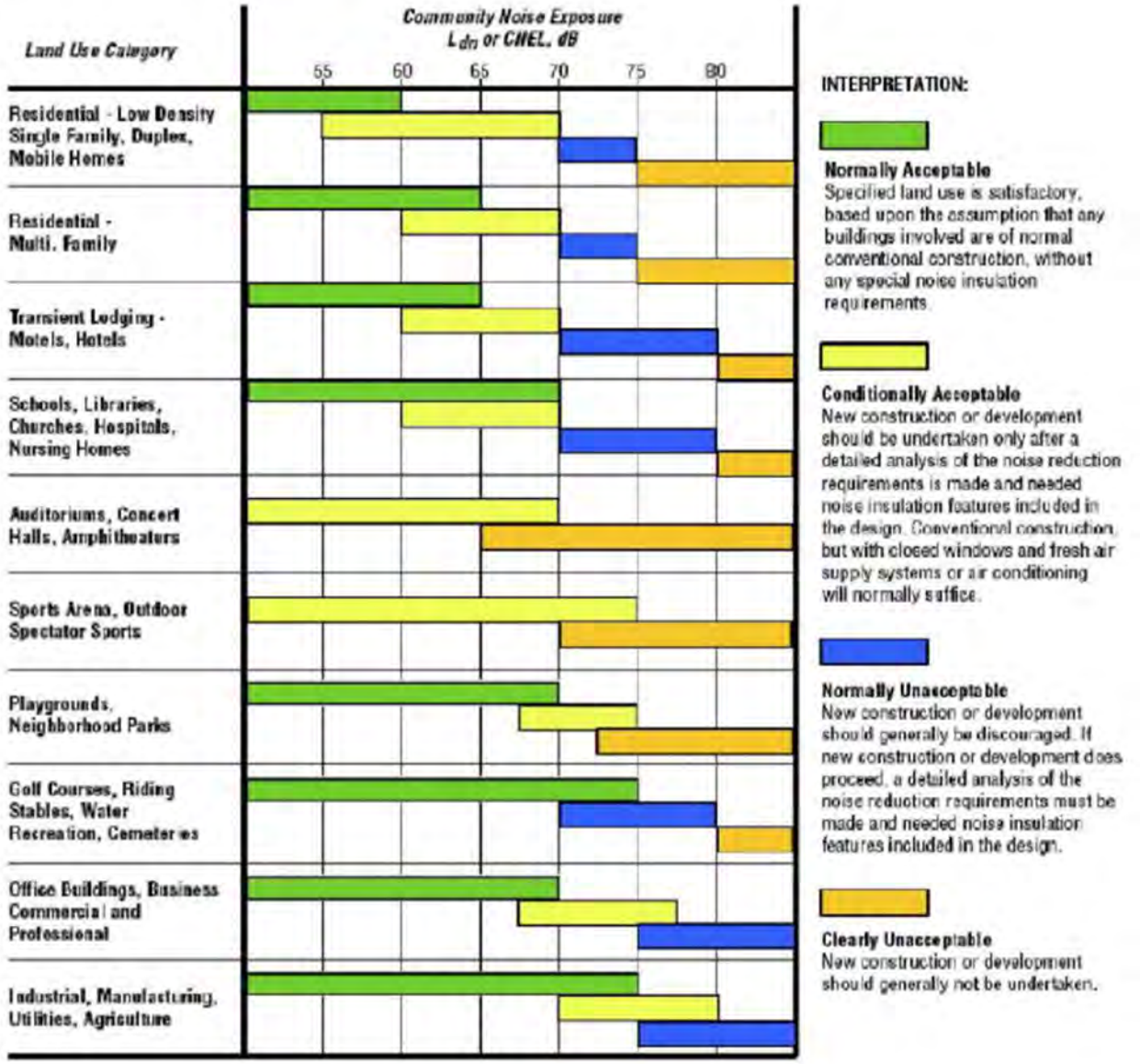
The noise criteria identified in the City of Twentynine Palms Noise Element (Table 4) are guidelines to evaluate the land use compatibility of transportation-related noise. The compatibility criteria, shown on Exhibit 3-A, provides the City with a planning tool to gauge the compatibility of land uses relative to existing and future exterior noise levels.

The *Land Use and Noise Compatibility Matrix* describes categories of compatibility and not specific noise standards. The transient lodging land uses of the Project are considered *clearly compatible* with unmitigated exterior noise levels of less than 65 dBA CNEL and *normally compatible* with unmitigated exterior noise levels approaching 70 dBA CNEL, *new construction or development should be undertaken only after detailed analysis of the noise reduction requirements are made and needed noise insulation features in the design are determined. Conventional construction, with closed windows and fresh air supply systems or air conditioning, will normally suffice.* For *normally incompatible* exterior noise levels, exceeding 80 dBA CNEL, *new construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements are made and needed noise insulation features must be included in the design.*

3.3 CITY OF TWENTYNINE PALMS DEVELOPMENT CODE

While the City of Twentynine Palms Noise Element provides guidelines and criteria to assess transportation noise on sensitive land uses, the County Code, Title 19 Development Code, Article 4 Site Development Regulations, Chapter 19.80 Noise Control contains the general noise regulation, noise level limits for various land uses from all noise sources, interior noise level limits, prohibitions, and vibration standards. (13)

EXHIBIT 3-A: CITY OF TWENTYNINE PALMS NOISE/LAND USE COMPATIBILITY MATRIX



Source: City of Twentynine Palms General Plan, Noise Element, Exhibit NS-9.

3.3.2 OPERATIONAL NOISE STANDARDS

To analyze noise impacts originating from a designated fixed location or private property such as the Yonder 29 Palms Project, stationary-source (operational) noise such as the expected air conditioning units, outdoor activities, music, an outdoor movie screen, trash enclosure activity, and parking lot activity are typically evaluated against standards established under a jurisdiction's Municipal Code. The City of Twentynine Palms County Code, Title 19 Development Code, Section 19.80.070(a) establishes the noise level standards for noise sources. Since the Project's land use will potentially impact adjacent noise-sensitive uses in the Project study area, this noise study

relies on the more conservative residential noise level standards to describe potential operational noise impacts.

For residential properties, the exterior noise level shall not exceed 65 dBA CNEL. (13) Further, Section 19.80.070(c) indicates that if the existing ambient noise level already exceeds any of the exterior noise level limit categories, then the standard shall be adjusted by 5 dBA to reflect the ambient conditions. The City of Twentynine Palms noise level standards are shown on Table 3-1 and included in Appendix 3.1.

TABLE 3-1: NOISE LEVEL STANDARDS

Affected Land Use (Receiving Noise)	Noise Level	
	Interior CNEL	Exterior CNEL
Residential Districts (RL, RS, RM, R-HD, OSR)	45 dBA	65dBA
Residential within Mixed Use	30 dBA Outdoor to Indoor Noise Reduction	-
Office Commercial District (CO)and Public District (P)	45 dBA	-
Other Commercial Districts (CN, CG, CT, CS)	45 dBA	-
Community Industrial (IC)	70 dBA	-
Open Space	-	65 dBA
Military (M)	As determined by Base Command	-

City of Twentynine Palms Muncipal Code Chapter 19.80.070(A)

3.4 CONSTRUCTION NOISE STANDARDS

Section 19.80.100 of the City of Twentynine Palms Development Code, provided in Appendix 3.1, indicates that construction activity is considered exempt from the noise level standards between the hours of 7:00 a.m. to 7:00 p.m. except on Sundays and Federal holidays. (13) However, neither the City of Twentynine Palms General Plan or Municipal Code establish numeric maximum acceptable construction source noise levels at potentially affected receivers, which would allow for a quantified determination of what CEQA constitutes a *substantial temporary or periodic noise increase*. Therefore, a numerical construction threshold based on Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment Manual* is used for analysis of daytime construction impacts, as discussed below.

According to the FTA, local noise ordinances are typically not very useful in evaluating construction noise. They usually relate to nuisance and hours of allowed activity, and sometimes specify limits in terms of maximum levels, but are generally not practical for assessing the impact of a construction project. Project construction noise criteria should account for the existing noise environment, the absolute noise levels during construction activities, the duration of the construction, and the adjacent land use. Due to the lack of standardized construction noise thresholds, the FTA provides guidelines that can be considered reasonable criteria for

construction noise assessment. The FTA considers a daytime exterior construction noise level of 80 dBA L_{eq} as a threshold for noise sensitive residential land use, a noise level of 85 dBA L_{eq} for commercial locations, and 90 dBA L_{eq} for industrial locations. (7)

3.5 CONSTRUCTION VIBRATION STANDARDS

Construction activity can result in varying degrees of ground-borne vibration, depending on the equipment and methods used, distance to the affected structures and soil type. Construction vibration is generally associated with pile driving and rock blasting. Other construction equipment such as air compressors, light trucks, hydraulic loaders, etc., generates little or no ground vibration. (7)

The City of Twentynine Palms Development Code, Chapter 19.80.100(a) states that vibration shall be no *greater than or equal to two-tenths inches per second measured at or beyond the lot line*. (13) Therefore, to determine if the vibration levels due to the operation and construction of the Project, the peak particle velocity (PPV) vibration level standard of 0.2 inches per second is used.

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4 SIGNIFICANCE CRITERIA

The following significance criteria are based on currently adopted guidance provided by Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (10) For the purposes of this report, impacts would be potentially significant if the Project results in or causes:

A. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

B. Generation of excessive ground-borne vibration or ground-borne noise levels?

C. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

While the City of Twentynine Palms General Plan Guidelines provide direction on noise compatibility and establish noise standards by land use type that are sufficient to assess the significance of noise impacts, they do not define the levels at which increases are considered substantial for use under Guideline A. CEQA Appendix G Guideline C applies to nearby public and private airports, if any, and the Project's land use compatibility.

4.1 CEQA GUIDELINES NOT FURTHER ANALYZED

The Project site is not located within two miles of a public airport or within an airport land use plan. The closest airport is Twentynine Palms Airport located approximately 10.8 miles east of the Project site. As such, the Project site would not be exposed to excessive noise levels from airport operations, and therefore, impacts are considered *less than significant,* and no further noise analysis is conducted in relation to CEQA Appendix G Guideline C.

4.2 NOISE-SENSITIVE RECEIVERS

Noise level increases resulting from the Project are evaluated based on the Appendix G CEQA Guidelines described above at the closest sensitive receiver locations. Under CEQA, consideration must be given to the magnitude of the increase, the existing ambient noise levels, and the location of noise-sensitive receivers to determine if a noise increase represents a significant adverse environmental impact. This approach recognizes *that there is no single noise increase that renders the noise impact significant.* (14)

Unfortunately, there is no completely satisfactory way to measure the subjective effects of noise or of the corresponding human reactions of annoyance and dissatisfaction. This is primarily because of the wide variation in individual thresholds of annoyance and differing individual experiences with noise. Thus, an important way of determining a person's subjective reaction to a new noise is the comparison of it to the existing environment to which one has adapted—the so-called *ambient* environment. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will typically be judged. The Federal Interagency Committee on Noise (FICON) (15) developed guidance to be used for the assessment

of project-generated increases in noise levels that consider the ambient noise level. The FICON recommendations are based on studies that relate aircraft noise levels to the percentage of persons highly annoyed by aircraft noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, these recommendations are often used in environmental noise impact assessments involving the use of cumulative noise exposure metrics, such as the average-daily noise level (CNEL) and equivalent continuous noise level (L_{eq}).

As previously stated, the approach used in this noise study recognizes *that there is no single noise increase that renders the noise impact significant*, based on a 2008 California Court of Appeal ruling on Gray v. County of Madera. (14) For example, if the ambient noise environment is quiet (<60 dBA) and the new noise source greatly increases the noise levels, an impact may occur if the noise criteria may be exceeded. Therefore, for this analysis, FICON identifies a *readily perceptible* 5 dBA or greater project-related noise level increase is considered a significant impact when the noise criteria for a given land use is exceeded. Per the FICON, in areas where the without project noise levels range from 60 to 65 dBA, a 3 dBA *barely perceptible* noise level increase appears to be appropriate for most people. When the without project noise levels already exceed 65 dBA, any increase in community noise louder than 1.5 dBA or greater is considered a significant impact if the noise criteria for a given land use is exceeded, since it likely contributes to an existing noise exposure exceedance.

The FICON guidance provides an established source of criteria to assess the impacts of substantial temporary or permanent increase in ambient noise levels. Based on the FICON criteria, the amount to which a given noise level increase is considered acceptable is reduced when the without Project noise levels are already shown to exceed certain land-use specific exterior noise level criteria. The specific levels are based on typical responses to noise level increases of 5 dBA or *readily perceptible*, 3 dBA or *barely perceptible*, and 1.5 dBA depending on the underlying without Project noise levels for noise-sensitive uses. These levels of increases and their perceived acceptance are consistent with guidance provided by both the Federal Highway Administration (4 p. 9) and Caltrans (16 p. 2_48).

4.3 SIGNIFICANCE CRITERIA SUMMARY

Noise impacts shall be considered significant if any of the following occur as a direct result of the proposed Project. Table 4-1 shows the significance criteria summary matrix.

TABLE 4-1: SIGNIFICANCE CRITERIA SUMMARY

Analysis	Land Use	Condition(s)	Significance Criteria	
			Daytime	Nighttime
On-Site	Noise-Sensitive1	Noise Level Threshold	See Exhibit 3-A	
Off-Site	Noise-Sensitive[1]	if ambient is < 60 dBA CNEL	≥ 5 dBA CNEL Project increase	
		if ambient is 60 - 65 dBA CNEL	≥ 3 dBA CNEL Project increase	
		if ambient is > 65 dBA CNEL	≥ 1.5 dBA CNEL Project increase	
Operational	Residential	Exterior Noise Level Limit[2]	65 dBA CNEL	
	Noise-Sensitive[1]	if ambient is < 60 dBA L_{eq}	≥ 5 dBA L_{eq} Project increase	
		if ambient is 60 - 65 dBA L_{eq}	≥ 3 dBA L_{eq} Project increase	
		if ambient is > 65 dBA L_{eq}	≥ 1.5 dBA L_{eq} Project increase	
Construction	All	Permitted between 7:00 a.m. to 7:00 p.m.; except Sundays and Federal holidays.[3]		
	Residential	Noise Level Threshold[4]	80 dBA L_{eq}	n/a
	Commercial		85 dBA L_{eq}	n/a
	Industrial		90 dBA L_{eq}	n/a
	All	Vibration Level Threshold[5]	0.2 PPV in/sec	n/a

[1] FICON, 1992.
[2] City of Twentynine Palms Development Code, Chapter 19.80.070 (Appendix 3.1)
[3] City of Twentynine Palms Development Code, Chapter 19.80.090 (Appendix 3.1).
[4] Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual.
[5] City of Twentynine Palms Development Code, Chapter 19.80.100 (Appendix 3.1).
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m. "n/a" = construction activities are not planned during the nighttime hours; "PPV" = peak particle velocity.

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5 EXISTING NOISE LEVEL MEASUREMENTS

To assess the existing noise level environment, 24-hour noise level measurements were taken at four locations in the Project study area. The receiver locations were selected to describe and document the existing noise environment within the Project study area. Exhibit 5-A provides the boundaries of the Project study area and the noise level measurement locations. To fully describe the existing noise conditions, noise level measurements were collected by Urban Crossroads, Inc. on Friday, December 1, 2023. Appendix 5.1 includes study area photos.

5.1 MEASUREMENT PROCEDURE AND CRITERIA

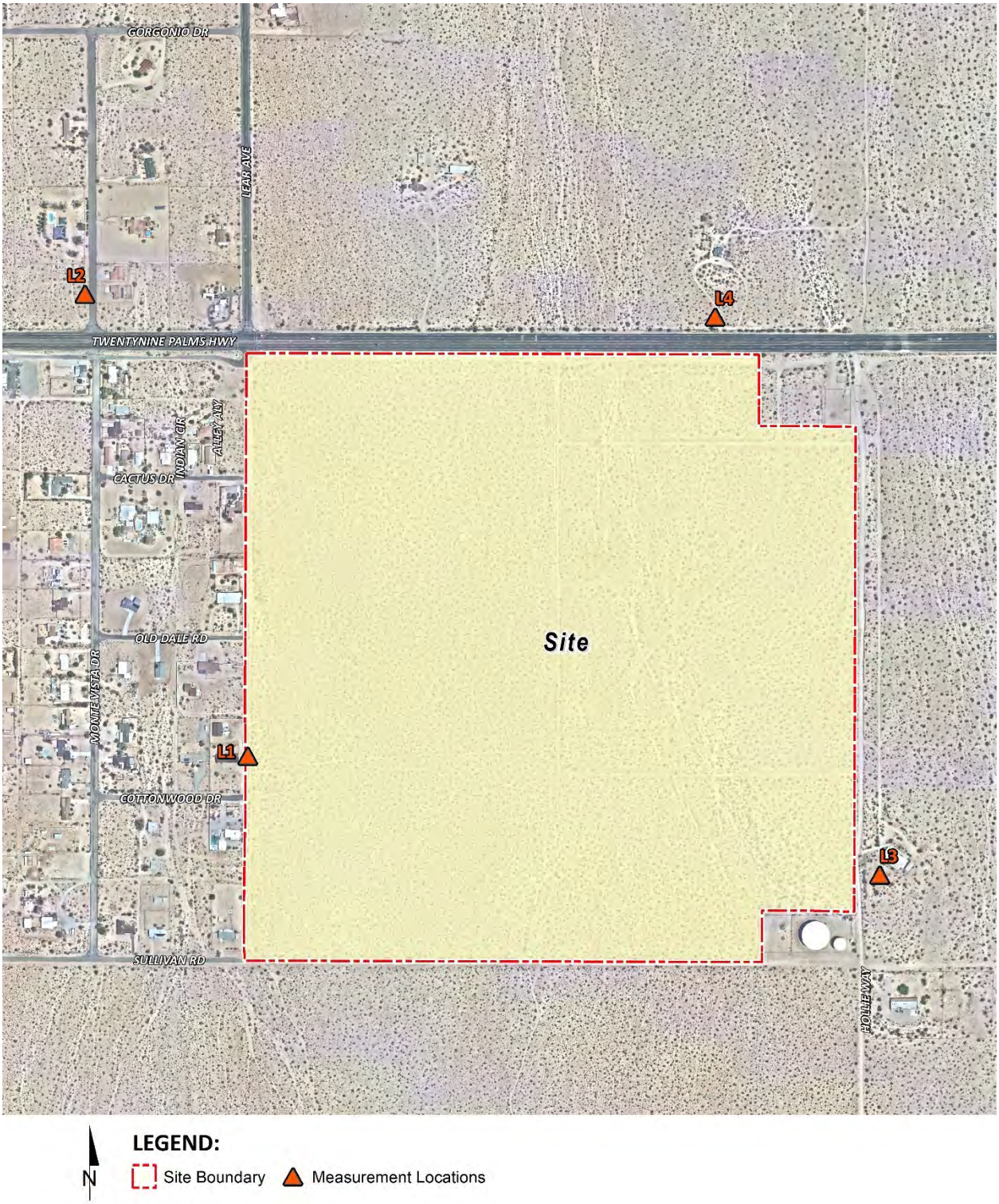
To describe the existing noise environment, the hourly noise levels were measured during typical weekday conditions over a 24-hour period. By collecting individual hourly noise level measurements, it is possible to describe the daytime and nighttime hourly noise levels and calculate the 24-hour CNEL. The long-term noise readings were recorded using Piccolo Type 2 integrating sound level meter and dataloggers. The Piccolo sound level meters were calibrated using a Larson-Davis calibrator, Model CAL 150. All noise meters were programmed in "slow" mode to record noise levels in "A" weighted form. The sound level meters and microphones were equipped with a windscreen during all measurements. All noise level measurement equipment satisfies the American National Standards Institute (ANSI) standard specifications for sound level meters ANSI S1.4-2014/IEC 61672-1:2013. (17)

5.2 NOISE MEASUREMENT LOCATIONS

The long-term noise level measurements were positioned as close to the nearest sensitive receiver locations as possible to assess the existing ambient hourly noise levels surrounding the Project site. Both Caltrans and the FTA recognize that it is not reasonable to collect noise level measurements that can fully represent every part of a private yard, patio, deck, or balcony normally used for human activity when estimating impacts for new development projects. This is demonstrated in the Caltrans general site location guidelines which indicate that, *sites must be free of noise contamination by sources other than sources of interest. Avoid sites located near sources such as barking dogs, lawnmowers, pool pumps, and air conditioners unless it is the express intent of the analyst to measure these sources*. (2) Further, FTA guidance states, t*hat it is not necessary nor recommended that existing noise exposure be determined by measuring at every noise-sensitive location in the project area. Rather, the recommended approach is to characterize the noise environment for clusters of sites based on measurements or estimates at representative locations in the community*. (7)

Based on recommendations of Caltrans and the FTA, it is not necessary to collect measurements at each individual building or residence, because each receiver measurement represents a group of buildings that share acoustical equivalence. (7) In other words, the area represented by the receiver shares similar shielding, terrain, and geometric relationship to the reference noise source. Receivers represent a location of noise sensitive areas and are used to estimate the future noise level impacts.

EXHIBIT 5-A: NOISE MEASUREMENT LOCATIONS



Collecting reference ambient noise level measurements at the nearby sensitive receiver locations allows for a comparison of the before and after Project noise levels and is necessary to assess potential noise impacts due to the Project's contribution to the ambient noise levels.

5.3 NOISE MEASUREMENT RESULTS

The noise measurements presented below focus on the average or equivalent sound levels (L_{eq}). The equivalent sound level (L_{eq}) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period. Table 5-1 identifies the hourly daytime (7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.) noise levels at each noise level measurement location.

TABLE 5-1: 24-HOUR AMBIENT NOISE LEVEL MEASUREMENTS

Location[1]	Description	Energy Average Noise Level (dBA L_{eq})[2]	
		Daytime	Nighttime
L1	Located west of the site near the residence at 69262 Cottonwood Drive	48.0	45.7
L2	Located northwest of the site near the residence at 6461 Monte Vista Ave.	63.3	60.5
L3	Located southeast of the site near the residence at 69711 Shoshone Valley Road	51.3	41.8
L4	Located northeast of the site near the residence at 6202 Twentynine Palms Highway	60.0	59.9

[1] See Exhibit 5-A for the noise level measurement locations.
[2] Energy (logarithmic) average levels. The long-term 24-hour measurement worksheets are included in Appendix 5.2. "Daytime" = 7:00 a.m. to 7:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

Table 5-1 provides the (energy average) noise levels used to describe the daytime and nighttime ambient conditions. These daytime and nighttime energy average noise levels represent the average of all hourly noise levels observed during these time periods expressed as a single number. Appendix 5.2 provides summary worksheets of the noise levels for each hour as well as the minimum, maximum, L_1, L_2, L_5, L_8, L_{25}, L_{50}, L_{90}, L_{95}, and L_{99} percentile noise levels observed during the daytime and nighttime periods.

The background ambient noise levels in the Project study area are dominated by the transportation-related noise associated with surface streets in addition to background industrial land use activities. This includes the auto and heavy truck activities on study area roadway segments near the noise level measurement locations.

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6 METHODS AND PROCEDURES

The following section outlines the methods and procedures used to model and analyze the future traffic noise environment.

6.1 FHWA TRAFFIC NOISE PREDICTION MODEL

The estimated roadway noise impacts from vehicular traffic were calculated using a computer program that replicates the Federal Highway Administration (FHWA) Traffic Noise Prediction Model- FHWA-RD-77-108. (18) The FHWA Model arrives at a predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL). In California the national REMELs are substituted with the California Vehicle Noise (Calveno) Emission Levels. (19) Adjustments are then made to the REMEL to account for: the roadway classification (e.g., collector, secondary, major or arterial), the roadway active width (i.e., the distance between the center of the outermost travel lanes on each side of the roadway), the total average daily traffic (ADT), the travel speed, the percentages of automobiles, medium trucks, and heavy trucks in the traffic volume, the roadway grade, the angle of view (e.g., whether the roadway view is blocked), the site conditions ("hard" or "soft" relates to the absorption of the ground, pavement, or landscaping), and the percentage of total ADT which flows each hour throughout a 24-hour period.

ON-SITE TRAFFIC NOISE PREDICTION MODEL INPUTS

The on-site roadway parameters including the average daily traffic (ADT) volumes used for this study are presented on Table 6-1. To describe the future traffic conditions on I-15, existing traffic volumes were collected from the *Annual Average Daily Truck Traffic (AADT) on the California Highway System*, prepared by the Caltrans Traffic Data Branch, and an assumed growth rate of 10-percent was used to estimate future conditions. (20) The traffic volumes shown on Table 6-1 reflect future long-range traffic conditions needed to assess the future on-site traffic noise environment and to identify the appropriate noise mitigation measures, if any, that address the worst-case future conditions. Soft site conditions were used to analyze the traffic noise impacts within the Project study area which account for the sound propagation loss over natural surfaces such as normal earth and ground vegetation. Research conducted by Caltrans has shown that the use of soft site conditions is appropriate for the application of the FHWA traffic noise prediction model used in this noise study. (21)

TABLE 6-1: ON-SITE ROADWAY PARAMETERS

Roadway Segment	Lanes	Classification[1]	Roadway Capacity Volume[1]	Speed Limit (mph)[2]	Site Conditions
SR-62	4	State Route	25,300	55	Soft

[1] Source: Caltrans, 2022 traffic counts at Joshua Tree Park Blvd. and SR-62, 2 percent annual growth for 20 years applied.
[2] Posted speed limits.

Table 6-2 presents the time-of-day vehicle splits by vehicle type, and Table 6-3 presents the total traffic flow distributions (vehicle mixes) used for this analysis. The vehicle mix provides the hourly distribution percentages of automobile, medium trucks, and heavy trucks for input into the FHWA Model based on roadway types. To predict the future noise environment at each building within the Project site, coordinate information was collected to identify the noise transmission path between the noise source and receiver. The coordinate information is based on the Project site plan showing the plotting of the Project building in relationship to SR-62.

TABLE 6-2: TIME OF DAY VEHICLE SPLITS

Time Period	Vehicle Type		
	Autos	Medium Trucks	Heavy Trucks
Daytime (7:00 a.m. - 7:00 p.m.)	77.5%	84.8%	86.5%
Evening (7:00 p.m. - 10:00 p.m.)	12.9%	4.9%	2.7%
Nighttime (10:00 p.m. - 7:00 a.m.)	9.6%	10.3%	10.8%
Total:	100.0%	100.0%	100.0%

Source: Typical Southern California vehicle mix.

TABLE 6-3: DISTRIBUTION OF TRAFFIC FLOW BY VEHICLE TYPE (VEHICLE MIX)

Roadway Classification	Total % Traffic Flow[1]			Total
	Autos	Medium Trucks	Heavy Trucks	
SR-62	94.10%	3.72%	2.19%	100.00%

[1] Source: Caltrans 2022 Truck Traffic Counts.

7 ON-SITE TRAFFIC NOISE IMPACTS

An on-site exterior noise impact analysis has been completed to determine the traffic-related noise levels and to identify potential necessary abatement measures for the proposed Yonder 29 Palms Project. It is expected that the primary source of noise impacts to the Project site will be traffic-related noise from SR-62.

7.1 ON-SITE EXTERIOR NOISE ANALYSIS

Using the FHWA noise prediction model and the parameters outlined in Tables 6-1 to 6-3, the expected future exterior noise levels for the Project commercial uses were calculated. The on-site traffic noise level impacts indicate that the Project building façade nearest to SR-62 is anticipated to experience an unmitigated exterior noise level of 59.9 dBA CNEL.

The results of the on-site traffic noise analysis indicate that the future exterior traffic noise levels at the commercial use of the Project will satisfy the 65 dBA CNEL exterior noise level standard of the City of Twentynine Palms General Plan Noise Element. Therefore, no exterior noise mitigation measures are required. The on-site transportation noise analysis calculations are provided in Appendix 7.1.

7.2 ON-SITE INTERIOR NOISE ANALYSIS

To ensure that the interior noise levels comply with the City of Twentynine Palms interior noise level standards, future noise levels were calculated at the first and second-floor building facades.

7.2.1 NOISE REDUCTION METHODOLOGY

The interior noise level is the difference between the predicted exterior noise level at the building facade and the noise reduction of the structure. Typical building construction will provide a Noise Reduction (NR) of approximately 12 dBA with "windows open" and a minimum 25 dBA noise reduction with "windows closed." However, sound leaks, cracks and openings within the window assembly can greatly diminish its effectiveness in reducing noise. Several methods are used to improve interior noise reduction, including: (1) weather-stripped solid core exterior doors; (2) upgraded dual glazed windows; (3) mechanical ventilation/air conditioning; and (4) exterior wall/roof assembles free of cut outs or openings.

7.2.2 INTERIOR NOISE LEVEL ASSESSMENT

To provide the necessary interior noise level reduction, a noise level greater than 57 CNEL at a building façade indicate that the Project building will require a windows-closed condition and a means of mechanical ventilation (e.g. air conditioning). Since the nearest building façade would be exposed to noise levels of 59.9 CNEL, the Project is providing air conditioning on all units, offices, and meeting spaces. To satisfy the 45 dBA CNEL interior noise level standard for interior uses, standard windows with minimum STC ratings of 27 for all windows will suffice. The interior noise analysis shows that with mechanical ventilation the Project will satisfy the interior noise level standards.

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8 OFF-SITE TRAFFIC NOISE ANALYSIS

The expected Project is anticipated to generate a maximum of 849 external vehicle trip-ends per day with 53 external AM peak vehicle hour trips and 58 external PM peak hour vehicle trips, which would represent an incremental increase to the existing average daily traffic volume on SR-62 of 25,300. While the Project would more than double traffic volumes on Lear Avenue north of Cactus Drive, the increase would not be perceivable due to the dominant traffic noise generated in this area by Twentynine Palms Highway. Therefore, the Project is not expected to generate perceptible noise level increase (i.e., 3 dBA) at nearby sensitive land uses adjacent to study area roadways. Due to the low traffic volumes generated by the Project, the off-site traffic noise levels generated by the Project are considered *less than significant* and no further analysis is required.

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9 SENSITIVE RECEIVER LOCATIONS

To assess the potential for long-term operational and short-term construction noise impacts, the following sensitive receiver locations, as shown on Exhibit 9-A, were identified as representative locations for analysis. Sensitive receivers are generally defined as locations where people reside or where the presence of unwanted sound could otherwise adversely affect the use of the land. Noise-sensitive land uses are generally considered to include schools, hospitals, single-family dwellings, mobile home parks, churches, libraries, and recreation areas. Moderately noise-sensitive land uses typically include multi-family dwellings, hotels, motels, dormitories, out-patient clinics, cemeteries, golf courses, country clubs, athletic/tennis clubs, and equestrian clubs. Land uses that are considered relatively insensitive to noise include business, commercial, and professional developments. Land uses that are typically not affected by noise include: industrial, manufacturing, utilities, agriculture, undeveloped land, parking lots, warehousing, liquid and solid waste facilities, salvage yards, and transit terminals.

To describe the potential off-site Project noise levels, five receiver locations in the vicinity of the Project site were identified. All distances are measured from the Project site boundary to the outdoor living areas (e.g., private backyards), Project boundary line, or at the building façade, whichever is closer to the Project site. The selection of receiver locations is based on FHWA guidelines and is consistent with additional guidance provided by Caltrans and the FTA, as previously described in Section 5.2. Other sensitive land uses in the Project study area that are located at greater distances than those identified in this noise study will experience lower noise levels than those presented in this report due to the additional attenuation from distance and the shielding of intervening structures. Distance is measured in a straight line from the project boundary to each receiver location.

R1: Location R1 represents existing noise sensitive rural residence located at 69262 Cottonwood Drive, approximately 14 feet to the west of the Project site. A 24-hour noise measurement was taken near this location, L1, to describe the existing ambient noise environment.

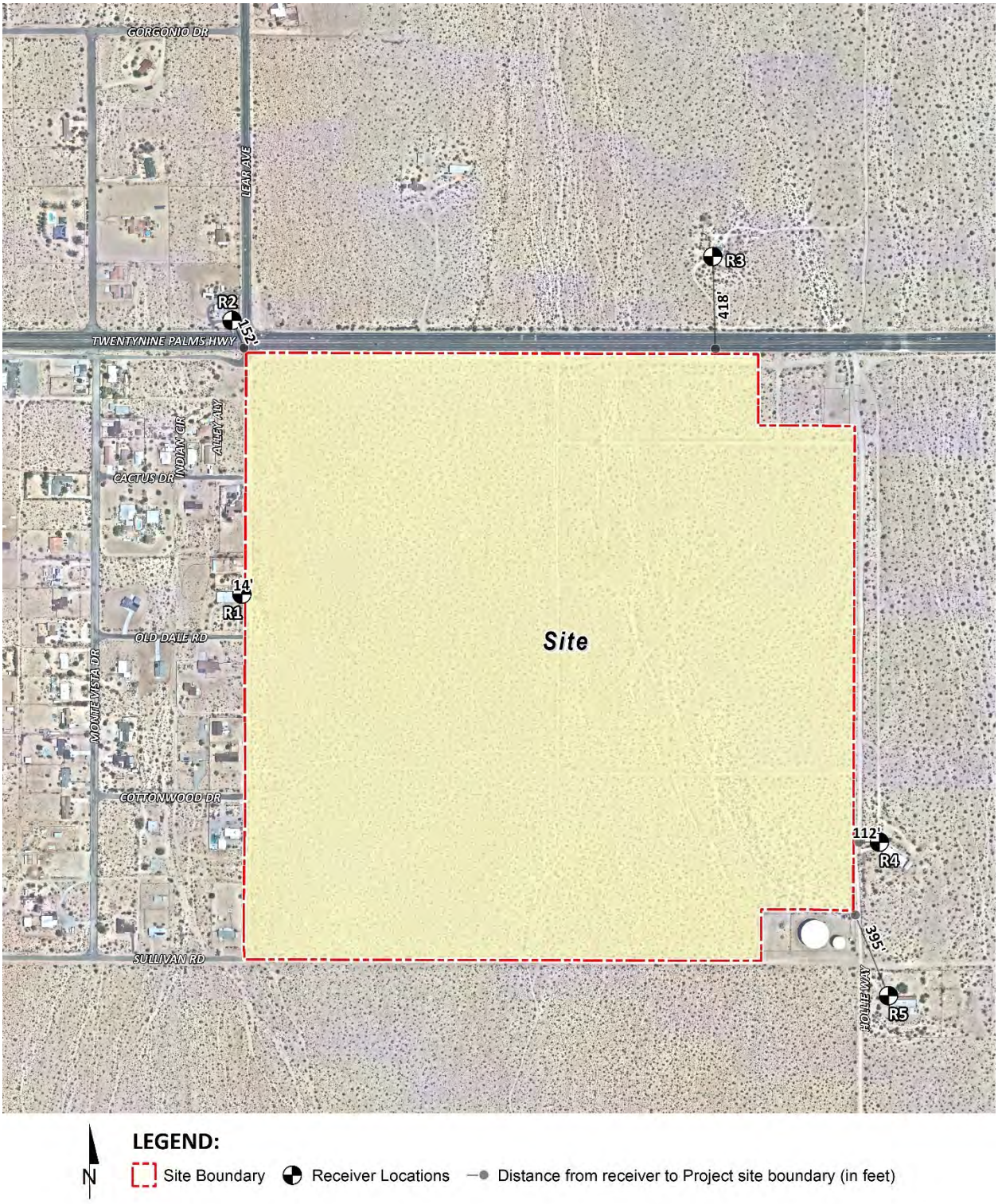
R2: Location R2 represents existing noise sensitive rural residence located at 6461 Monte Vista Ave., approximately 152 feet to the northeast of the Project site. A 24-hour noise measurement was taken near this location, L2, to describe the existing ambient noise environment.

R3: Location R3 represents the existing noise sensitive rural residence located at 6202 Twentynine Palms Highway, approximately 418 feet to the west of the Project site. A 24-hour noise measurement was taken near this location, L4, to describe the existing ambient noise environment.

R4: Location R4 rural residence located at 69711 Shoshone Valley Road, approximately 112 feet to the south of the Project site. A 24-hour noise measurement was taken near this location, L3, to describe the existing ambient noise environment.

R5: Location R5 rural residence located at 69721 Shoshone Valley Road, approximately 395 feet to the south of the Project site. A 24-hour noise measurement was taken near this location, L3, to describe the existing ambient noise environment.

EXHIBIT 9-A: SENSITIVE RECEIVER LOCATIONS



10 OPERATIONAL NOISE IMPACTS

This section analyzes the potential stationary-source operational noise impacts at the nearest receiver locations, identified in Section 9, resulting from the operation of the Yonder 29 Palms Project. Exhibit 10-A identifies the representative receiver locations and noise source locations used to assess the hourly average L_{eq} operational noise levels consistent with the City of Twentynine Palms noise standards. Appendix 10.1 includes the detailed calculations for the Project operational noise levels presented in this section.

10.1 OPERATIONAL NOISE SOURCES

This operational noise analysis is intended to describe noise level impacts associated with the expected typical daytime and nighttime activities at the Project site. To present the potential worst-case noise conditions, this analysis assumes the Project would be operational 24 hours per day, seven days per week. The on-site Project-related noise sources are expected to include: the air conditioning units, outdoor activities, music, an outdoor movie screen, trash enclosure activity, and parking lot activity.

10.2 REFERENCE NOISE LEVELS

To estimate the Project operational noise impacts, reference noise levels were taken from manufacturers specifications or measurements were collected from similar types of activities to represent the noise levels expected with the development of the proposed Project. This section provides a detailed description of the reference noise level measurements shown on Table 10-1 used to estimate the Project operational noise impacts. It is important to note that the following projected noise levels assume the worst-case noise environment with the air conditioning units, outdoor activities, music, an outdoor movie screen, trash enclosure activity, and parking lot activity all operating at the same time. These sources of noise activity will likely vary throughout the day.

EXHIBIT 10-A: OPERATIONAL NOISE SOURCE LOCATIONS

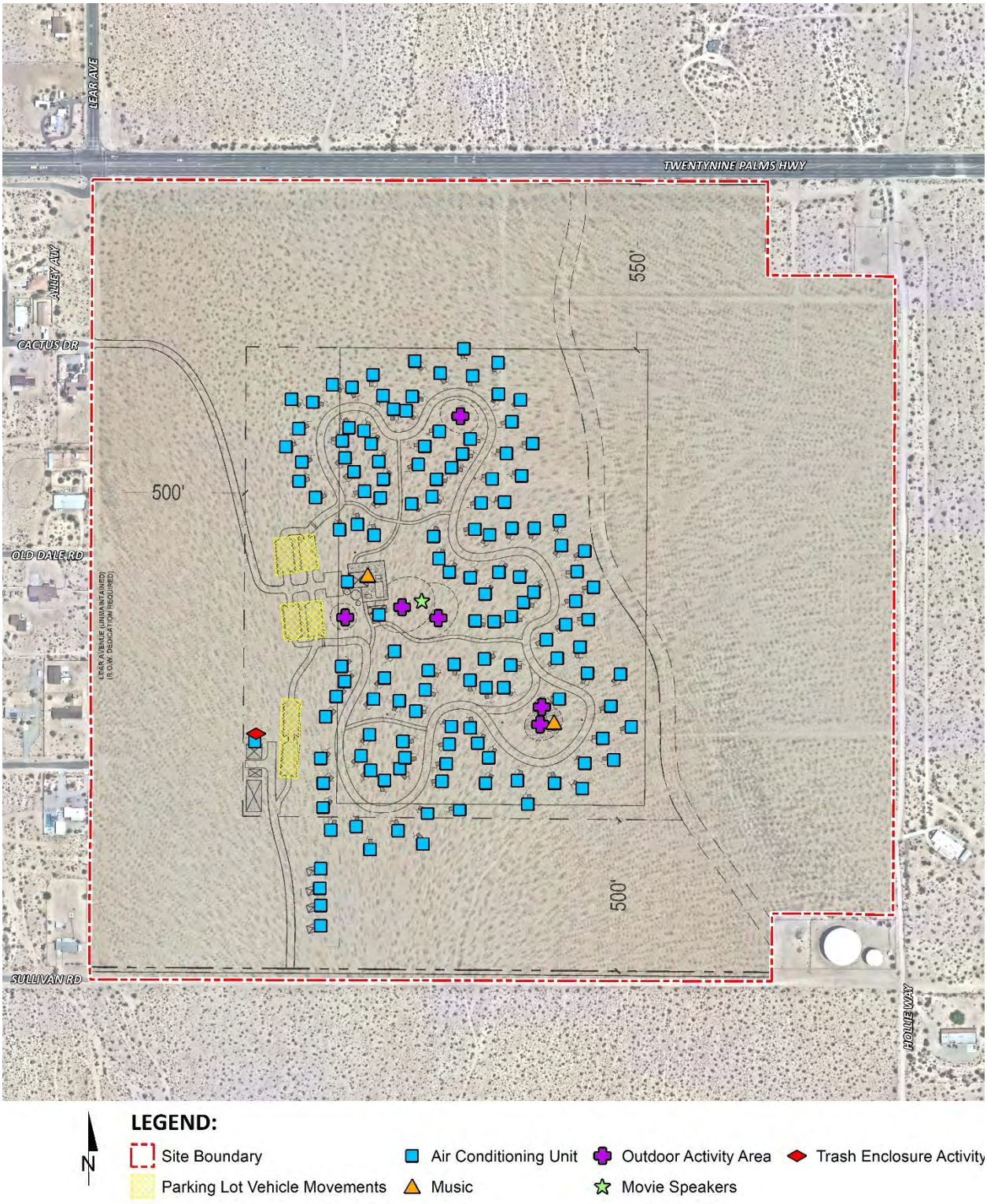


TABLE 10-1: REFERENCE NOISE LEVEL MEASUREMENTS

Noise Source	Noise Source Height (Feet)	Min./Hour[2]		Reference Noise Level (dBA L_{eq}) @ 50 Feet	Sound Power Level (dBA)[3]
		Day	Night		
Air Conditioning Unit[1]	3'	45'	30'	43.4	75.0
Outdoor Activity	5'	60'	0'	59.9	91.5
Movies Theater Activity	5'	60'	60'	64.5	96.1
Ambient Music	5'	60'	0'	61.3	92.9
Trash Enclosure Activity[1]	5'	10'	10'	56.8	88.4
Parking Lot Vehicle Movement	0'	60'	60'	55.5	87.2

[1] As collected by Urban Crossroads, Inc.
[2] Anticipated duration (minutes within the hour) of noise activity during typical hourly conditions expected at the Project site. "Daytime" = 7:00 a.m. - 10:00 p.m.; "Nighttime" = 10:00 p.m. - 7:00 a.m.
[3] Sound power level represents the total amount of acoustical energy (noise level) produced by a sound source independent of distance or surroundings. Sound power levels calculated using the CadnaA noise model at the reference distance to the noise source. Numbers may vary due to size differences between point and area noise sources.

10.2.1 MEASUREMENT PROCEDURES

Some of the reference noise level measurements presented in this section were collected using a Larson Davis LxT Type 1 precisions sound level meter (serial number 01146). The LxT sound level meter was calibrated using a Larson-Davis calibrator, Model CAL 200, was programmed in "slow" mode to record noise levels in "A" weighted form and was located at approximately five feet above the ground elevation for each measurement. The sound level meters and microphones were equipped with a windscreen during all measurements. All noise level measurement equipment satisfies the American National Standards Institute (ANSI) standard specifications for sound level meters ANSI S1.4-2014/IEC 61672-1:2013. (22)

10.2.2 AIR CONDITIONING UNITS

To assess the noise levels created by the air conditioning units, reference noise levels were taken from equipment specifications for a 1- to 3-ton residential ductless mini split outdoor condensing units (Carrier 38MARB). Manufacturers data sheets are included in Appendix 10.1. Each unit was modeled as operating 45 minutes per hour during the daytime and 30 minutes during the nighttime. For this noise analysis, the air conditioning units are expected to be ground mounted adjacent to the proposed buildings. The center of the air conditioning units are anticipated to be located 3 feet above ground level. At a uniform reference distance of 50 feet, each unit would generate a reference noise level of 44.4 dBA (75 dBA L_w).

10.2.3 OUTDOOR ACTIVITY

To assess the noise levels created by the outdoor activities, a reference noise level of 59.9 dBA L_{eq} at 50 feet (91.5 dBA L_w) has been developed to describe dining and drinking activities on outdoor patio areas, with background music playing, people talking, etc. collected by Urban

Crossroads, Inc. are used to describe the outdoor activity expected at the site. The outdoor activity noise levels include kids playing, running, and parents talking and other people in the background on cellular phones. Noise associated with outdoor activities is expected to occur for the entire hour (60 minutes) during daytime hours (7:0 a.m. – 10:00 p.m.).

10.2.4 MOVIE THEATER ACTIVITY

The outdoor movie screen beginning and ending times are dependent on sunset and thus may occur during nighttime hours, i.e., after 10:00 p.m., during the summer months. The audio for the outdoor movie area will be broadcasted by personal radios or similar mobile devices. A reference noise level of 67.8 dBA L_{eq} at 3 feet (75 dBA L_w) for each device is used to model up to 130 individual devices for a combined reference noise level of 64.5 L_{eq} at 50 feet. The movies theater is modeled as operating the full hour during daytime and nighttime activities.

10.2.5 AMBIENT MUSIC

Soft background music will be played in the main and secondary lodge areas throughout the day from 6 AM to 10 PM. Based on the ambient noise level in the Project area the Project site experience daytime ambient noise levels ranging from 48 to 51.3 dBA L_{eq}. Therefore, a reference noise level of 92.9 dBA L_w operating the full hour, which is equivalent to 61.3 dBA L_{eq} at 50 feet, is used to model on-site ambient music. This noise level would be readily noticeable within the lodge areas above ambient noise levels.

10.2.6 TRASH ENCLOSURE ACTIVITY

To describe the noise levels associated with a trash enclosure activity, Urban Crossroads collected a reference noise level measurement at an existing trash enclosure containing two dumpster bins. The trash enclosure noise levels describe metal gates opening and closing, metal scraping against concrete floor sounds, dumpster movement on metal wheels, and trash dropping into the metal dumpster. The reference noise levels describe trash enclosure noise activities when trash is dropped into an empty metal dumpster, as would occur at the Project site. The measured reference noise level at the uniform 50-foot reference distance is 56.8 dBA L_{eq} for the trash enclosure activity. The reference noise level describes the expected noise source activities associated with the trash enclosures for the Project's proposed building. Typical trash enclosure activities are estimated to occur for 10 minutes per hour.

10.2.7 PARKING LOT VEHICLE MOVEMENTS

Parking activities are based on the number of parking spaces. The Project includes approximately 130 new spaces, which are assumed to have up to 2 movements per hour for a total of 260 events in an hour. Based on studies conducted in Europe and Australia, the average parking procedure, which included movement associated with either entering or exiting the parking area, parking the vehicles, and opening and closing doors resulted in a sound power level of approximately 63 dBA L_w per event (23) (24). Based on the number of parking spaces per lot grouping the total noise level for each parking area is 87.2 dBA L_w.

10.3 CADNAA NOISE PREDICTION MODEL

To fully describe the exterior operational noise levels from the Project, Urban Crossroads, Inc. developed a noise prediction model using the CadnaA (Computer Aided Noise Abatement) computer program. CadnaA can analyze multiple types of noise sources using the spatially accurate Project site plan, georeferenced Nearmap aerial imagery, topography, buildings, and barriers in its calculations to predict outdoor noise levels.

Using the ISO 9613-2 protocol, CadnaA will calculate the distance from each noise source to the noise receiver locations, using the ground absorption, distance, and barrier/building attenuation inputs to provide a summary of noise level at each receiver and the partial noise level contributions by noise source. Consistent with the ISO 9613-2 protocol, the CadnaA noise prediction model relies on the reference sound power level (L_w) to describe individual noise sources. While sound pressure levels (e.g. L_{eq}) quantify in decibels the intensity of given sound sources at a reference distance, sound power levels (L_w) are connected to the sound source and are independent of distance. Sound pressure levels vary substantially with distance from the source and diminish because of intervening obstacles and barriers, air absorption, wind, and other factors. Sound power is the acoustical energy emitted by the sound source and is an absolute value that is not affected by the environment.

The operational noise level calculations provided in this noise study account for the distance attenuation provided due to geometric spreading, when sound from a localized stationary source (i.e., a point source) propagates uniformly outward in a spherical pattern. A default ground attenuation factor of 0.5 was used in the noise analysis to account for mixed ground representing a combination of hard and soft surfaces. Appendix 10.2 includes the detailed noise model inputs used to estimate the Project operational noise levels presented in this section.

10.4 PROJECT OPERATIONAL NOISE LEVELS

Using the reference noise levels to represent the proposed Project operations that include air conditioning units, outdoor activities, music, an outdoor movie screen, trash enclosure activity, and parking lot activity, Urban Crossroads, Inc. calculated the operational source noise levels that are expected to be generated at the Project site and the Project-related noise level increases that would be experienced at each of the sensitive receiver locations. Table 10-2 shows the Project daytime operational noise levels at the off-site receiver locations are conservatively expected to range from 33.4 to 38.5 dBA L_{eq}. Table 10-3 shows the Project nighttime operational noise levels at the off-site receiver locations are conservatively expected to range from 25.8 to 32.5 dBA L_{eq}. Table 10-4 combines and weights the noise levels generated by the Project during the daytime and nighttime and presents the 24-hour CNEL. The noise levels at the off-site receiver locations are conservatively expected to range from 34.0 to 40.1 dBA CNEL.

TABLE 10-2: DAYTIME PROJECT OPERATIONAL NOISE LEVELS

Noise Source[1]	Daytime Noise Level (dBA L_{eq})				
	R1	R2	R3	R4	R5
Air Conditioning Unit1	23.0	19.1	18.7	19.8	17.8
Outdoor Activity	35.0	30.7	30.6	32.4	30.4
Movies Theater Activity	32.8	27.8	26.9	28.0	26.2
Ambient Music	32.0	27.0	26.4	29.7	27.6
Trash Enclosure Activity1	20.4	13.4	10.8	12.6	11.7
Parking Lot Vehicle Movement	18.8	11.7	9.0	9.6	8.4
Total (All Noise Sources)	**38.5**	**33.8**	**33.4**	**35.3**	**33.4**

[1] See Exhibit 9-A for the noise source locations. CadnaA noise model calculations are included in Appendix 10.2.

TABLE 10-3: NIGHTTIME PROJECT OPERATIONAL NOISE LEVELS

Noise Source[1]	Nighttime Noise Level (dBA L_{eq})				
	R1	R2	R3	R4	R5
Air Conditioning Unit1	20.3	16.4	16.0	17.0	15.1
Outdoor Activity	0.0	0.0	0.0	0.0	0.0
Movies Theater Activity	31.8	26.9	26.0	27.0	25.2
Ambient Music	0.0	0.0	0.0	0.0	0.0
Trash Enclosure Activity1	19.4	12.5	9.8	11.7	10.8
Parking Lot Vehicle Movement	17.8	10.7	8.0	8.7	7.4
Total (All Noise Sources)	**32.5**	**27.5**	**26.6**	**27.6**	**25.8**

[1] See Exhibit 9-A for the noise source locations. CadnaA noise model calculations are included in Appendix 10.2.

TABLE 10-4: DAILY PROJECT OPERATIONAL NOISE LEVELS

Noise Source[1]	Nighttime Noise Level (dBA CNEL)				
	R1	R2	R3	R4	R5
Air Conditioning Unit1	27.0	23.1	22.7	23.8	21.8
Outdoor Activity	32.0	27.7	27.6	29.4	27.4
Movies Theater Activity	38.2	33.3	32.4	33.4	31.6
Ambient Music	29.0	24.0	23.4	26.7	24.6
Trash Enclosure Activity1	25.9	18.9	16.2	18.1	17.2
Parking Lot Vehicle Movement	24.2	17.1	14.4	15.1	13.8
Total (All Noise Sources)	**40.1**	**35.2**	**34.5**	**35.9**	**34.0**

[1] See Exhibit 9-A for the noise source locations. CadnaA noise model calculations are included in Appendix 10.2.

10.5 PROJECT OPERATIONAL NOISE LEVEL COMPLIANCE

To demonstrate compliance with local noise regulations, the Project-only operational noise levels are evaluated against exterior noise level thresholds based on the City of Twentynine Palms

exterior noise level standards at nearest noise-sensitive receiver locations. Table 10-5 shows the operational noise levels associated with the Project will satisfy the City of Twentynine Palms exterior noise level standards at all nearby receiver locations. Therefore, the operational noise impacts are considered *less than significant* at the nearest noise-sensitive receiver locations.

TABLE 10-5: OPERATIONAL NOISE LEVEL COMPLIANCE

Receiver Location[1]	Project Operational Noise Levels (dBA L_{eq})[2]		Exterior Noise Level Standards (dBA L_{eq})[3]		Noise Level Standards Exceeded?[4]	
	Daytime	Nighttime	Daytime	Nighttime	Daytime	Nighttime
R1	35.3	20.3	55	45	No	No
R2	31.0	16.5	55	45	No	No
R3	30.9	16.1	55	45	No	No
R4	32.6	17.1	55	45	No	No
R5	30.6	15.2	55	45	No	No

[1] See Exhibit 9-A for the receiver locations.
[2] Proposed Project operational noise levels as shown in Tables 10-2 and 10-3.
[3] Exterior noise level standards are shown in Table 3-1.
[4] Do the estimated Project operational noise source activities exceed the noise level standards? "Daytime" = 7:01 a.m. to 10:00 p.m.; "Nighttime" = 10:01 p.m. to 7:00 a.m.

10.6 PROJECT OPERATIONAL NOISE LEVEL INCREASES

To describe the Project operational noise level increases, the Project operational noise levels are combined with the existing ambient noise levels measurements for the nearest receiver locations potentially impacted by Project operational noise sources. Since the units used to measure noise, decibels (dB), are logarithmic units, the Project-operational and existing ambient noise levels cannot be combined using standard arithmetic equations. (2) Instead, they must be logarithmically added using the following base equation:

$$SPL_{Total} = 10\log_{10}[10^{SPL1/10} + 10^{SPL2/10} + \ldots 10^{SPLn/10}]$$

Where "SPL1," "SPL2," etc. are equal to the sound pressure levels being combined, or in this case, the Project-operational and existing ambient noise levels. The difference between the combined Project and ambient noise levels describes the Project noise level increases to the existing ambient noise environment. As indicated on Table 10-6, the Project will generate daytime operational noise level increases ranging up to 0.2 dBA L_{eq} at the nearest receiver locations. Similarly as indicated on Table 10-7, the Project will generate nighttime operational noise level increases ranging up to 0.2 dBA L_{eq} at the nearest receiver locations. Project-related operational noise level increases will satisfy the operational noise level increase significance criteria presented on Table 4-1. Therefore, the incremental Project operational noise level increase is considered *less than significant* at all receiver locations.

TABLE 10-5: DAYTIME PROJECT OPERATIONAL NOISE LEVEL INCREASES

Receiver Location[1]	Total Project Operational Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project and Ambient[5]	Project Increase[6]	Increase Criteria[7]	Increase Criteria Exceeded?
R1	40.1	L2	63.3	63.3	0.0	3	No
R2	35.2	L1	48.0	48.2	0.2	5	No
R3	34.5	L4	60.0	60.0	0.0	3	No
R4	35.9	L3	51.3	51.4	0.1	5	No
R5	34.0	L3	51.3	51.4	0.1	5	No

[1] See Exhibit 9-A for the receiver locations.
[2] Total Project daytime operational noise levels as shown on Table 10-2.
[3] Reference noise level measurement locations as shown on Exhibit 5-A.
[4] Observed daytime ambient noise levels as shown on Table 5-1.
[5] Represents the combined ambient conditions plus the Project activities.
[6] The noise level increase expected with the addition of the proposed Project activities.
[7] Significance increase criteria as shown on Table 4-1.

TABLE 10-6: NIGHTTIME OPERATIONAL NOISE LEVEL INCREASES

Receiver Location[1]	Total Project Operational Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project and Ambient[5]	Project Increase[6]	Increase Criteria[7]	Increase Criteria Exceeded?
R1	32.5	L2	60.5	60.5	0.0	3	No
R2	27.5	L1	45.7	45.8	0.1	5	No
R3	26.6	L4	59.9	59.9	0.0	5	No
R4	27.6	L3	41.8	42.0	0.2	5	No
R5	25.8	L3	41.8	41.9	0.1	5	No

[1] See Exhibit 9-A for the receiver locations.
[2] Total Project nighttime operational noise levels as shown on Table 10-1.
[3] Reference noise level measurement locations as shown on Exhibit 5-A.
[4] Observed nighttime ambient noise levels as shown on Table 5-1.
[5] Represents the combined ambient conditions plus the Project activities.
[6] The noise level increase expected with the addition of the proposed Project activities.
[7] Significance increase criteria as shown on Table 4-1.

11 CONSTRUCTION IMPACTS

This section analyzes potential impacts resulting from the short-term construction activities associated with the development of the Project. Exhibit 11-A shows the construction noise source activity location in relation to the nearest sensitive receiver locations previously described in Section 9. To prevent high levels of construction noise from impacting noise-sensitive land uses, City of Twentynine Palms Development Code Chapter 19.80.100, states that construction activities are limited to the hours of 7:00 a.m. to 7:00 p.m. on any day and limited at any time on Sundays and federal holidays.

11.1 CONSTRUCTION NOISE LEVELS

Noise generated by the Project construction equipment will include a combination of trucks, power tools, concrete mixers, and portable generators that when combined can reach high levels. The number and mix of construction equipment are expected to occur in the following stages:

- Site Preparation
- Grading
- Structure assembly
- Concrete pads/Paving

11.2 TYPICAL CONSTRUCTION REFERENCE NOISE LEVELS

To describe construction noise activities, this construction noise analysis was prepared using reference construction equipment noise levels from the Federal Highway Administration (FHWA) published the Roadway Construction Noise Model (RCNM), which includes a national database of construction equipment reference noise emission levels. (25) The RCNM equipment database, provides a comprehensive list of the noise generating characteristics for specific types of construction equipment. In addition, the database provides an acoustical usage factor to estimate the fraction of time each piece of construction equipment is operating at full power (i.e., its loudest condition) during a construction operation.

EXHIBIT 11-A: CONSTRUCTION NOISE ACTIVITY

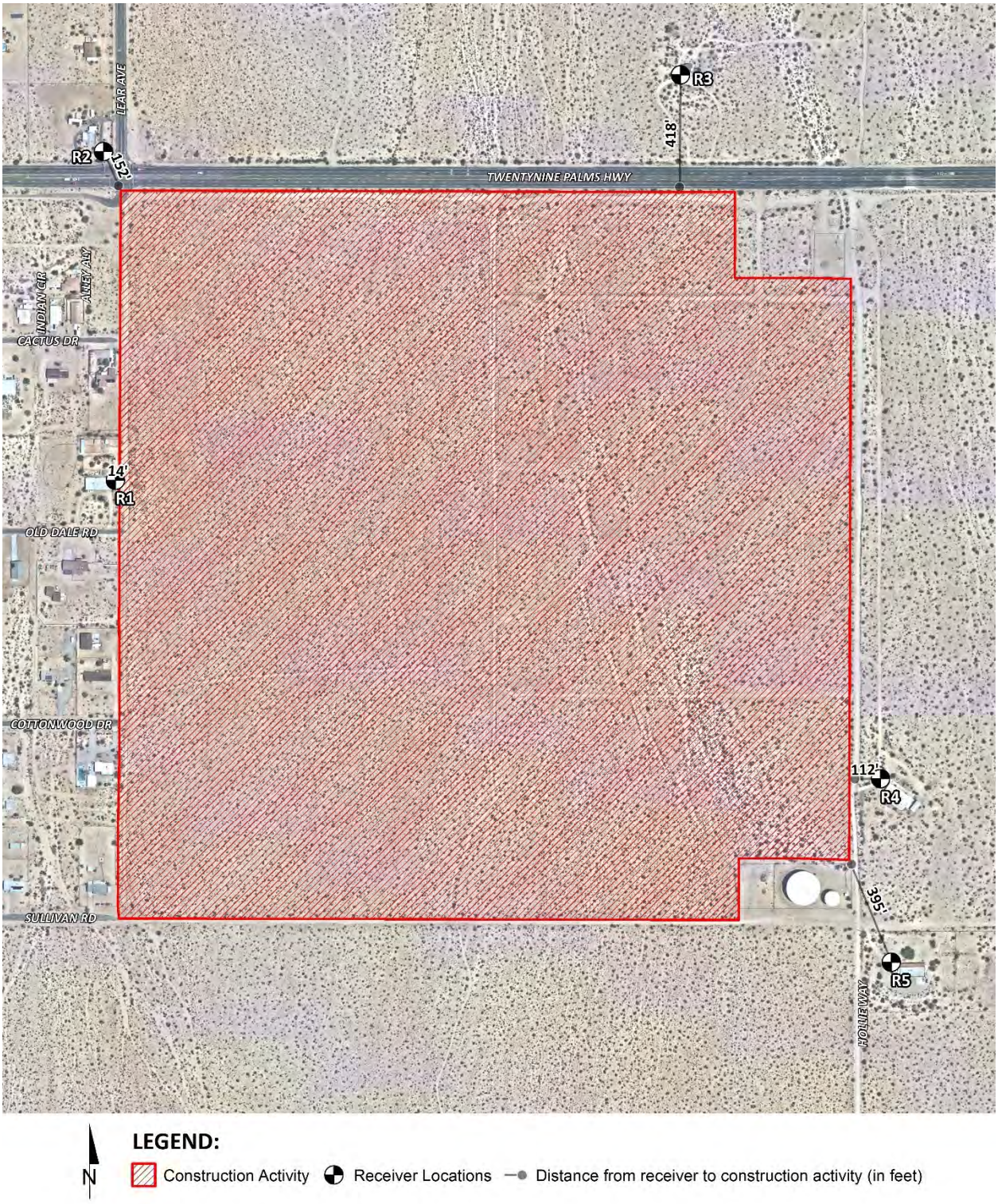


TABLE 11-1: CONSTRUCTION REFERENCE NOISE LEVELS

Construction Stage	Reference Construction Equipmnet[1]	Reference Noise Level @ 50 Feet (dBA L_{eq})	Composite Reference Noise Level (dBA L_{eq})	Reference Power Level (dBA L_w)
Site Preparation	Dozer	78.0	83.0	115.0
	Front End Loader	75.0		
	Grader	81.0		
Grading	Excavator	77.0	84.0	116.0
	Tractor	80.0		
	Scraper	80.0		
Building Construction	Crane	73.0	77.0	109.0
	Backhoe	74.0		
	Generator (<25kVA)	70.0		
Paving	Paver	74.0	78.0	110.0
	Dump Truck	72.0		
	Roller	73.0		
Architectural Coating	Man Lift	68.0	76.0	108.0
	Compressor (air)	74.0		
	Generator (<25kVA)	70.0		

[1] FHWA Road Construction Noise Model.

11.3 CONSTRUCTION NOISE ANALYSIS

Using the reference construction equipment noise levels and the CadnaA noise prediction model, calculations of the Project construction noise level impacts at the nearby sensitive receiver locations were completed. For construction noise assessment, construction equipment can be considered to operate in two modes: stationary and mobile. As defined, stationary equipment operates in a single location for one or more days at a time, with either fixed-power operation (e.g., pumps, generators, and compressors) or variable-power operation (e.g., pile drivers, rock drills, and pavement breakers). Mobile equipment moves around the construction site with power applied in cyclic fashion, such as bulldozers, graders, and loaders (FTA 2018). The FTA and FHWA recommend noise impacts from stationary equipment be assessed from the center of the equipment location, while noise impacts from mobile construction equipment should be assessed from the center of the equipment activity area (e.g., construction site). Thus, to assess a more realistic and reasonable worst-case construction scenario while accounting for the dynamic nature of construction activities, this Project construction noise analysis models the equipment combination with the highest reference combined level as a single moving point within the construction area (Project site boundary). Construction impacts are based on the highest noise level calculated at each receiver location. As shown on Table 11-2, the construction noise levels are expected to range from 46.9 to 63.3 dBA L_{eq}, and the highest construction levels are expected to range from 54.9 to 63.3 dBA L_{eq} at the nearest receiver locations. Appendix 11.1 includes the detailed CadnaA construction noise model inputs.

TABLE 11-2: CONSTRUCTION EQUIPMENT NOISE LEVEL SUMMARY

Receiver Location[1]	Construction Noise Levels (dBA L_{max})					
	Site Preparation	Grading	Building Construction	Paving	Architectural Coating	Highest Levels[2]
R1	62.3	63.3	56.3	57.3	55.3	63.3
R2	55.6	56.6	49.6	50.6	48.6	56.6
R3	54.8	55.8	48.8	49.8	47.8	55.8
R4	58.2	59.2	52.2	53.2	51.2	59.2
R5	53.9	54.9	47.9	48.9	46.9	54.9

[1] The nearest noise receiver locations are shown in Exhibit 9-A.
[2] Construction noise level calculations based on distance from the project site boundaries (construction activity area) to nearby receiver locations. CadnaA construction noise model inputs are included in Appendix 11.1.

11.4 CONSTRUCTION NOISE LEVEL COMPLIANCE

To evaluate whether the Project will generate potentially significant short-term noise levels at nearest receiver locations, a construction-related daytime noise level threshold of 80 dBA L_{eq} is used as a reasonable threshold to assess the daytime construction noise level impacts at residential locations. The construction noise analysis shows that the nearest receiver locations will satisfy the reasonable daytime significance thresholds shown in Table 4-1 during Project construction activities as shown on Table 11-3. Therefore, the noise impacts due to Project construction noise is considered *less than significant* at all receiver locations.

TABLE 11-3: CONSTRUCTION NOISE LEVEL COMPLIANCE

Receiver Location[1]	Construction Noise Levels (dBA L_{max})		
	Highest Construction Noise Levels[2]	Threshold[3]	Threshold Exceeded?[4]
R1	63.3	80	No
R2	56.6	80	No
R3	55.8	80	No
R4	59.2	80	No
R5	54.9	80	No

[1] All noise receiver locations are shown on Exhibit 9-A.
[2] Highest construction noise level calculations based on distance from the construction noise source activity to nearby receiver locations as shown on Table 11-2.
[3] Construction noise level thresholds are limited to the noise sensitive receiver locations (Section 3.5).
[4] Do the estimated Project construction noise levels exceed the construction noise level threshold?

11.5 CONSTRUCTION VIBRATION IMPACTS

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods used, distance to the affected structures and soil type. It is expected that ground-borne vibration from Project construction activities would cause only intermittent, localized intrusion. Ground-borne vibration levels resulting from typical construction activities occurring within the Project site were estimated by data published by the Federal Transit

Administration (FTA) (7) and Caltrans (26). However, while vehicular traffic is rarely perceptible, construction has the potential to result in varying degrees of temporary ground vibration, depending on the specific construction activities and equipment used.

Ground vibration levels associated with various types of construction equipment are summarized on Table 11-4. Based on the representative vibration levels presented for various construction equipment types, it is possible to estimate the potential Project construction vibration levels using the following vibration assessment methods defined by Caltrans. Caltrans provides the following equation: $PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$ (8).

TABLE 11-4: VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT

Equipment	PPV (in/sec) at 25 feet
Small bulldozer	0.003
Jackhammer	0.035
Loaded Trucks	0.076
Large bulldozer	0.089

Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual

Table 11-5 presents the expected Project related vibration levels at the nearby receiver locations. At distances ranging from 514 feet to 918 feet from Project construction activities, construction vibration levels are estimated to be less than 0.01 in/sec PPV and will remain below the City of Twentynine Palms 0.2 in/sec PPV threshold for vibration at all receiver locations. Therefore, the Project-related vibration impacts are considered *less than significant* during the construction activities at the Project site.

Further, vibration levels at the site of the closest sensitive receiver are unlikely to be sustained during the entire construction period but will occur rather only during the times that heavy construction equipment is operating simultaneously adjacent to the Project site perimeter.

TABLE 11-5: PROJECT CONSTRUCTION VIBRATION LEVELS

Receiver[1]	Distance to Const. Activity (Feet)[2]	Typical Construction Vibration Levels PPV (in/sec)[3]					Thresholds PPV (in/sec)[4]	Thresholds Exceeded?[5]
		Small bulldozer	Jackhammer	Loaded Trucks	Large bulldozer	Highest Vibration Level		
R1	514'	0.000	0.000	0.001	0.001	0.001	0.20	No
R2	652'	0.000	0.000	0.001	0.001	0.001	0.20	No
R3	918'	0.000	0.000	0.000	0.000	0.000	0.20	No
R4	612'	0.000	0.000	0.001	0.001	0.001	0.20	No
R5	895'	0.000	0.000	0.000	0.000	0.000	0.20	No

[1] Receiver locations are shown on Exhibit 9-A.
[2] Distance from Project construction boundary to the receiver building structure.
[3] Based on the Vibration Source Levels of Construction Equipment (Table 11-4).
[4] Caltrans 2020.
[5] Does the peak vibration exceed the acceptable vibration thresholds?
"PPV" = Peak Particle Velocity

12 REFERENCES

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13 CERTIFICATION

The contents of this noise study report represent an accurate depiction of the noise environment and impacts associated with the proposed Yonder 29 Palms Project. The information contained in this noise study report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at (619) 778-1971.

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EDUCATION

Bachelor of Science in Urban and Regional Planning
California Polytechnic State University, Pomona • June 2000

PROFESSIONAL AFFILIATIONS

ASA – Acoustical Society of America
AEP – Association of Environmental Planners
AWMA – Air and Waste Management Association
INCE – Institute of Noise Control Engineers

PROFESSIONAL CERTIFICATIONS

Approved Acoustical Consultant • County of San Diego
FHWA Traffic Noise Model of Training • November 2004
CadnaA Basic and Advanced Training Certificate • October 2008.

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APPENDIX 3.1:

CITY OF TWENTYNINE PALMS DEVELOPMENT CODE

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Chapter 19.80 - Noise Control

19.80.010 - Purpose

This Chapter establishes standards to reduce unnecessary, excessive and annoying noise and vibration in the City, maintain quiet in those areas which exhibit low noise levels, and implement programs aimed at reducing noise in those areas in the City where noise levels are above acceptable values.

19.80.020 - Applicability

A. The standards and requirements contained in this Chapter shall apply to all areas within the City limits of Twentynine Palms.

B. Exemptions. The following sources of noise are exempt:

1. Temporary construction, repair or demolition activities between 7:00 a.m. and 7:00 p.m. except Sundays and federal holidays.
2. During the months of May through September of each year, temporary construction, repair or demolition activities shall be permitted during the hours of 6:00 a.m. to 7:00 p.m.

19.80.030 - Definitions

All terminology used in this Chapter, not defined below, shall be in conformance with applicable publications of the American National Standards Institute (ANSI) or its successor body. The following words, phrases and terms as used in this Chapter shall have the meaning as indicated below:

A. A Weighted Sound Level. The sound level in decibels as measured on a sound level meter using the A-weighting network. The level so read is designated dBA.

B. Ambient Noise Level. The composite of noise from all sources near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

C. Community Noise Equivalent Level (CNEL). CNEL is a noise rating scale. CNEL is similar to the LDN scale (see Day Night Noise Level, below) except that it includes an additional 5 dBA penalty for events that occur during the evening (7 p.m. to 10 p.m.) time period.

D. Construction. Any site preparation, assembly, erection, substantial repair, alteration, or similar action, for or of public or private rights-of-way, structures, utilities or similar property.

E. Cumulative Period. An additive period of time.

F. Day Night Noise Level (LDN). A 24-hour, time-weighted annual average noise level. Time-weighted refers to the fact that noise which occurs during certain sensitive time periods is penalized for occurring at these times. In the LDN scale, those events that take place during the night (10 p.m. to 7 a.m.) are penalized by 10 dB. This penalty was selected to attempt to account for increased human sensitivity to noise during the quieter period of a day, where sleep is the most probable activity. LDN is composed of individual time segments which may be continuous or interrupted.

G. Decibel (dBA). A unit for measuring the amplitude of a sound, equal to 20 times the logarithm to the ratio of the sound measured to the reference pressure, which is 20 micropascals.

H. Demolition. Any dismantling, intentional destruction or removal of structures, utilities, public or private rights-of-way surfaces, or similar existing development.

I. Equivalent Noise Level (LEQ). The "energy" average noise level during the time period of the sample. It is a number that represents a decibel sound level. This constant sound level would contain an equal amount of energy as a fluctuating sound level over a given period of time. LEQ can be measured for any time period, but is typically measured for 15 minutes, 1 hour or 24 hours.

J. Motor Vehicle. Any and all self-propelled vehicles as defined in the California Motor Vehicle Code, including all on-highway type motor vehicles subject to registration under said Code, and all off-highway type motor vehicles subject to identification under said Code.

K. Sound Level Meter. An instrument, including a microphone, an amplifier, an output meter, or frequency weighting networks, for the measurement of sound levels. Such instrument shall meet or exceed the pertinent requirements for type S2A meters contained in the ANSI specifications for sound level meter, S1.4-1971, or the most recent revision thereof.

19.80.040 - Administration

A. Lead Agency. The Community Development Director shall designate a control program established by this Chapter. Such program may designate a specific staff person or persons to administer the noise monitoring and review on behalf of the City.

B. Powers. In order to implement and enforce this Chapter and for the general purpose of noise abatement and control, the City shall have, in addition to any other vested authority, the power to:

1. Conduct or cause to be conducted studies, research, and monitoring related to noise including joint cooperative investigation with public or private agencies, and the application for, and acceptance of, grants.
2. Review all public and private projects which are likely to cause noise in violation of this Chapter and which are subject to mandatory review or approval by other departments. Such review may include, but shall not be limited to:
    a. Review for compliance with the intent and provisions of this Chapter.
    b. Require sound analyses which identify existing and projected noise sources and associated noise levels.
    c. Require the usage of adequate mitigation measures to avoid violation of any provision of this Chapter.
3. Upon presentation of proper credentials, enter and/or inspect any private property, place, report or records at any time when granted permission by the owner or by some other person with authority to act for the owner. When permission is refused or cannot be obtained, a search warrant may be obtained from a court of competent jurisdiction upon a showing of probable cause to believe that a violation of this Chapter may exist. Such inspection may include the administration of any necessary tests.

19.80.050 - General Noise Regulations

Notwithstanding any other provision of this Chapter, and in addition thereto, it shall be unlawful for any person to willfully or negligently make or continue, or cause to be made or continued, any loud, unnecessary or unusual noise which disturbs the peace and quiet enjoyment of any neighborhood or which causes any discomfort or annoyance to any reasonable person of normal sensitivity residing in the area. The factors which shall be considered in determining whether a violation of the provisions of this section exists shall include, but not limited to, the following:

A. The sound level of the objectionable noise.
B. The sound level of the ambient noise.
C. The proximity of the noise to residential sleeping facilities.
D. The nature and zoning of the area within which the noise emanates.
E. The number of persons affected by the noise source.
F. The duration of the noise and its tonal, informational or musical content.
G. Whether the noise is continuous, recurrent or intermittent.
H. Whether the noise is produced by a commercial or noncommercial activity.

19.80.060 - Noise Measurement Procedure

A. Upon receipt of a signed complaint from a citizen or upon direction from the City Council, the City shall investigate the complaint. The investigation shall consist of a measurement of the offending noise and the gathering of data to adequately define the noise problem and shall include the following:
    1. Type of noise source.
    2. Location of noise source relative to complainant's property.
    3. Time period during which noise source is considered by complainant to be intrusive.
    4. Total duration of noise produced by noise source.
    5. Date and time of noise measurement survey.
B. The following procedures shall be followed when taking noise measurements:
    1. Utilizing the A weighting scale of the sound level meter and the "slow-meter response" (use "fast" response for impulsive type sounds), the noise level shall be measured at a position(s) at any point on the receiver's property.
    2. In general, the microphone shall be located 4 or 5 feet above the ground, and 10 feet or more from the nearest reflective surface where possible. However, in those cases where another elevation is deemed appropriate, the latter shall be utilized. If the noise complaint is related to interior noise levels, interior noise measurements shall be made within the affected residential unit. The measurements shall be made at a point at least 4 feet from the wall, ceiling or floor nearest the noise source, with windows in the normal seasonal configuration. Calibration of the measurement equipment utilizing an acoustic calibration shall be performed immediately prior to recording any noise data.

A. Table 19.80.070-1 describes the noise standard for emanations from any source, as it affects adjacent properties:

Table 19.80.070-1
Noise Standards

Affected Land Use (Receiving Noise)	Noise Level	
	Interior CNEL	Exterior CNEL
Residential Districts (RL, RS, RM, R-HD, OSR)	45 dBA [1]	65dBA [2,3]
Residential within Mixed Use	30 dBA Outdoor to Indoor Noise Reduction [4]	-
Office Commercial District (CO) and Public District (P)	45 dBA [1]	-
Other Commercial Districts (CN, CG, CT, CS)	45 dBA [1]	-
Community Industrial (IC)	70 dBA	-
Open Space [5]	-	65 dBA
Military (M)	As determined by Base Command	-

[illegible]

B. *No person shall operate or cause to be operated any source of sound at any location or allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, which causes the noise level, when measured on any other property, either incorporated or unincorporated, to exceed:*

1. The noise standard for that receiving land use, as specified in Table 19.80.070-1, for a cumulative period of more than 30 minutes in any hour; or
2. The noise standard plus 5 dBA for a cumulative period of more than 15 minutes in any hour; or
3. The noise standard plus 10 dBA for a cumulative period of more than five minutes in any hour; or

4. The noise standard plus 15 dBA for a cumulative period of more than one minute in any hour; or
5. The noise standard plus 20 dBA for any period of time.

C. If it is determined that the existing noise level exceeds any of the standards contained in Subsection 19.74.070.B (1-5) above, the allowable noise exposure standard for a new project may be increased by 5 dBA in each category.

D. If the alleged offense consists entirely of impact noise or simple tone noise, each of the noise levels in Table 19.80.070-1 shall be reduced by 5 dBA.

19.80.080 - Interior Noise Limits

The maximum permissible interior noise level for residential uses, generated from another property, as measured in a residential living area on the receiving property, shall be as specified in Table 19.80.080-1.

Table 19.80.080-1
Residential Interior Noise Limits

Time Interval	Allowable Interior Noise Level (dBA)
Five (5) minutes in any given hour	45
One (1) minute in any given hour	55
Any length of time	65

19.80.090 - Prohibited Noise and Vibration

A. No person shall unnecessarily make, continue or permit to continue prohibited noise and/or vibration as described herein. Any person(s) so doing shall be in violation of this ordinance.

B. Operating, playing or permitting the operation or playing of any radio, television, sound system, drum, musical instrument or similar device which produces or reproduces sound:

1. Between the hours of 10 p.m. and 7 a.m. in such a manner as to create a noise disturbance across a residential or commercial real property line, except for cases in which an exception has been issued by the City.
2. In such a manner as to exceed the levels set forth for public space in Table 19.80.070-1, measured at a distance of at least 50 feet from such device operating on a public right-of-way or public space.

C. Using or operating for any purpose any loudspeaker system or similar device between the hours of 10 p.m. and 7 a.m. such that the sound therefrom creates a noise disturbance across a residential real property line, except for any noncommercial public speaking, public assembly or other activity for which an exception has been issued by the City.

D. Offering for sale, selling anything, or advertising by shouting or outcry within any residential or commercial area of the City except by variance issued by the City. The provisions of this Section shall not be construed to prohibit the selling by outcry of merchandise, food, and beverages at licensed sporting events, parades, fairs, circuses or other similar licensed public entertainment events.

E. Owning, possessing or harboring any animal or bird which frequently or for long duration, howls, barks, meows, squawks or makes other sounds which create a noise disturbance across a residential or commercial real property line. This provision shall not apply to public zoos.

F. Loading, unloading, opening, closing or other handling of boxes, crates, containers, building materials, garbage cans or similar objects between the hours of 10 p.m. and 7 a.m. in such a manner as to cause a noise disturbance across a residential real property line.

19.80.100 - Vibration

A. Vibration Standard. No ground vibration shall be allowed which can be felt without the aid of instruments at or beyond the lot line; nor will any vibration be permitted which produces a particle velocity greater than or equal to 0.2 inches per second measured at or beyond the lot line.

B. Vibration Measurement. Vibration velocity shall be measured with a seismograph or other instrument capable of measuring and recording displacement and frequency, particle velocity or acceleration. Readings are to be made at points of maximum vibration along any lot line.

C. Exempt Vibrations. The following sources of vibration are not regulated by this Code:

1. Motor vehicles not under the control of an industrial use.
2. Temporary construction, maintenance or demolition activities between 7:00 a.m. and 7:00 p.m. except Sundays and federal holidays.

APPENDIX 5.1:

STUDY AREA PHOTOS

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15631 - Yonder

15631_L1_E

15631_L1_N

15631_L1_S

15631_L1_W

15631 - Yonder

15631_L2_E

15631_L2_N

15631_L2_S

15631_L2_W

15631 - Yonder

15631_L3_E

15631_L3_N

15631_L3_S

15631_L3_W

15631 - Yonder

15631_L4_E

15631_L4_N

15631_L4_S

15631_L4_W

APPENDIX 5.2:

NOISE LEVEL MEASUREMENT WORKSHEETS

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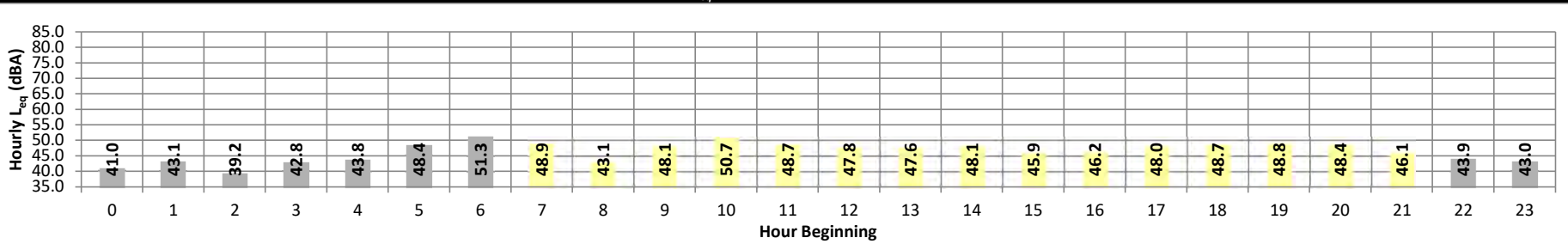
24-Hour Noise Level Measurement Summary

Date: Friday, December 1, 2023 *Location:* L1 - Located west of the site near the residence at 69262 *Meter:* Piccolo II *JN:* 15631

Project: Yonder *Source:* Cottonwood Drive *Analyst:* B. Maddux

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	41.0	47.0	34.9	46.6	46.1	45.1	44.4	42.1	39.9	36.3	35.7	35.1	41.0	10.0	51.0
	1	43.1	51.9	35.2	51.1	50.7	49.7	48.3	43.1	40.5	36.4	35.9	35.4	43.1	10.0	53.1
	2	39.2	44.7	33.4	44.3	43.8	43.0	42.4	40.5	38.3	34.7	34.2	33.5	39.2	10.0	49.2
	3	42.8	48.7	36.9	48.4	47.8	46.8	46.2	43.8	41.7	38.4	37.8	37.1	42.8	10.0	52.8
	4	43.8	48.6	39.2	48.1	47.7	47.0	46.6	44.8	43.1	40.5	40.0	39.4	43.8	10.0	53.8
	5	48.4	53.0	43.8	52.7	52.4	51.7	51.2	49.4	47.6	45.0	44.5	43.9	48.4	10.0	58.4
	6	51.3	56.2	47.3	55.8	55.5	54.5	54.1	52.1	50.4	48.4	47.9	47.5	51.3	10.0	61.3
Day	7	48.9	52.3	45.6	52.0	51.9	51.3	50.8	49.7	48.5	46.6	46.2	45.8	48.9	0.0	48.9
	8	43.1	47.3	40.4	46.9	46.5	45.5	45.0	43.7	42.7	41.1	40.8	40.5	43.1	0.0	43.1
	9	48.1	55.9	42.0	55.2	54.6	52.9	52.0	48.7	46.0	43.2	42.8	42.1	48.1	0.0	48.1
	10	50.7	59.3	43.7	58.7	57.9	56.3	54.8	51.0	48.4	45.2	44.6	43.9	50.7	0.0	50.7
	11	48.7	56.1	42.3	55.5	54.9	53.4	52.2	49.4	47.1	43.9	43.3	42.6	48.7	0.0	48.7
	12	47.8	56.2	41.9	55.5	54.8	53.0	51.6	48.2	45.8	43.1	42.6	42.1	47.8	0.0	47.8
	13	47.6	55.8	42.1	55.1	54.3	52.5	51.4	47.9	45.7	43.3	42.8	42.3	47.6	0.0	47.6
	14	48.1	55.2	42.9	54.6	53.9	52.2	51.3	48.7	46.7	44.1	43.7	43.1	48.1	0.0	48.1
	15	45.9	51.3	42.1	50.8	50.3	49.1	48.5	46.7	45.1	43.1	42.7	42.3	45.9	0.0	45.9
	16	46.2	49.9	43.4	49.5	49.1	48.4	48.0	46.9	45.9	44.3	44.0	43.6	46.2	0.0	46.2
	17	48.0	53.1	44.7	52.7	52.2	51.0	50.3	48.6	47.4	45.6	45.2	44.8	48.0	0.0	48.0
	18	48.7	53.9	44.9	53.5	53.1	52.1	51.4	49.4	48.0	45.9	45.5	45.1	48.7	0.0	48.7
	19	48.8	54.0	44.7	53.7	53.3	52.4	51.8	49.7	47.9	45.7	45.3	44.9	48.8	5.0	53.8
	20	48.4	53.7	44.6	53.3	52.8	51.8	51.2	49.0	47.6	45.6	45.2	44.8	48.4	5.0	53.4
	21	46.1	50.2	42.4	49.9	49.5	48.8	48.4	46.8	45.7	43.4	43.0	42.6	46.1	5.0	51.1
Night	22	43.9	49.0	39.5	48.7	48.3	47.6	47.1	44.7	43.0	40.6	40.2	39.6	43.9	10.0	53.9
	23	43.0	48.2	37.4	47.8	47.4	46.7	46.2	44.2	41.7	38.7	38.2	37.6	43.0	10.0	53.0

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	43.1	47.3	40.4	46.9	46.5	45.5	45.0	43.7	42.7	41.1	40.8	40.5
	Max	50.7	59.3	45.6	58.7	57.9	56.3	54.8	51.0	48.5	46.6	46.2	45.8
Energy Average		48.0	Average:		53.1	52.6	51.4	50.6	48.3	46.6	44.3	43.8	43.3
Night	Min	39.2	44.7	33.4	44.3	43.8	43.0	42.4	40.5	38.3	34.7	34.2	33.5
	Max	51.3	56.2	47.3	55.8	55.5	54.5	54.1	52.1	50.4	48.4	47.9	47.5
Energy Average		45.7	Average:		49.3	48.9	48.0	47.4	45.0	42.9	39.9	39.4	38.8

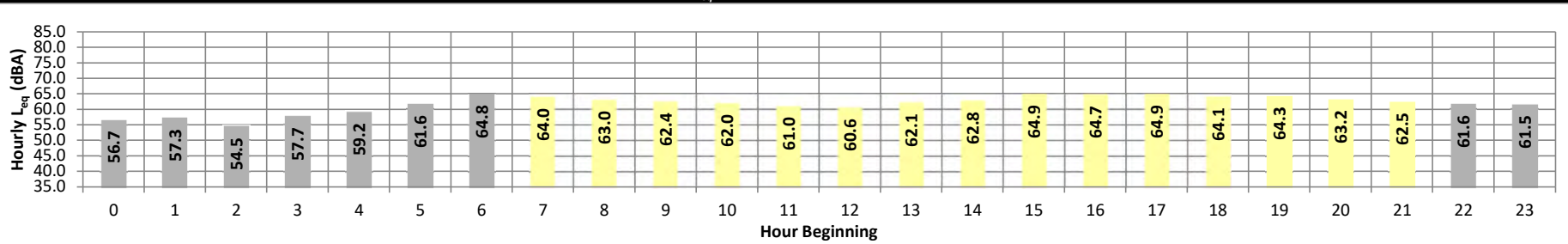
24-Hour CNEL	Leq (dBA) Daytime (7am-10pm)	Leq (dBA) Nighttime (10pm-7am)
52.9	**48.0**	**45.7**

24-Hour Noise Level Measurement Summary

Date: Friday, December 1, 2023 *Location:* L2 - Located northwest of the site near the residence at 6461 *Meter:* Piccolo II *JN:* 15631

Project: Yonder *Source:* Monte Vista Ave. *Analyst:* B. Maddux

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	56.7	65.7	37.4	65.5	65.2	64.0	63.0	56.8	49.0	39.5	38.6	37.6	56.7	10.0	66.7
	1	57.3	66.5	39.9	66.2	65.9	64.7	63.3	57.0	50.4	42.5	41.3	40.1	57.3	10.0	67.3
	2	54.5	64.0	33.9	63.8	63.5	62.2	60.7	54.2	44.9	35.3	34.4	34.0	54.5	10.0	64.5
	3	57.7	67.0	37.3	66.7	66.4	65.1	63.9	57.5	50.2	39.2	38.4	37.5	57.7	10.0	67.7
	4	59.2	67.7	41.6	67.4	67.0	66.0	65.0	59.9	53.5	44.4	42.8	41.8	59.2	10.0	69.2
	5	61.6	69.2	46.9	69.0	68.7	67.5	66.6	63.0	58.2	50.0	48.6	47.2	61.6	10.0	71.6
	6	64.8	72.2	53.1	72.0	71.6	70.4	69.3	66.0	62.5	55.7	54.5	53.4	64.8	10.0	74.8
Day	7	64.0	71.8	48.3	71.6	71.1	69.6	68.5	65.2	61.4	51.3	49.6	48.5	64.0	0.0	64.0
	8	63.0	70.1	48.5	69.9	69.5	68.1	67.2	64.4	61.1	52.5	50.4	48.7	63.0	0.0	63.0
	9	62.4	70.4	50.1	70.1	69.6	67.7	66.6	63.5	60.3	53.4	51.9	50.5	62.4	0.0	62.4
	10	62.0	70.1	48.7	69.5	68.9	67.2	66.0	63.2	59.9	52.4	50.8	49.1	62.0	0.0	62.0
	11	61.0	69.3	47.6	69.0	68.4	66.3	65.2	62.0	58.6	51.4	49.8	48.0	61.0	0.0	61.0
	12	60.6	68.1	48.4	67.8	67.4	65.9	64.9	61.7	58.5	51.9	50.3	48.7	60.6	0.0	60.6
	13	62.1	69.7	49.2	69.5	68.9	67.5	66.2	63.3	60.3	52.8	51.2	49.5	62.1	0.0	62.1
	14	62.8	69.6	50.7	69.3	68.9	67.6	66.8	64.2	61.3	54.4	52.7	51.0	62.8	0.0	62.8
	15	64.9	73.7	51.5	73.2	72.7	70.4	69.3	65.5	62.5	54.9	53.1	51.7	64.9	0.0	64.9
	16	64.7	71.2	52.5	71.0	70.6	69.4	68.5	66.0	63.5	56.6	54.8	52.8	64.7	0.0	64.7
	17	64.9	70.5	54.0	70.3	70.0	69.2	68.6	66.4	63.7	57.2	55.5	54.2	64.9	0.0	64.9
	18	64.1	71.1	52.2	70.9	70.4	69.0	68.0	65.5	62.4	55.0	53.7	52.4	64.1	0.0	64.1
	19	64.3	71.2	54.0	70.9	70.7	69.4	68.2	65.7	62.5	56.6	55.6	54.2	64.3	5.0	69.3
	20	63.2	71.2	49.8	70.9	70.5	68.9	67.6	64.3	60.8	52.5	51.1	50.1	63.2	5.0	68.2
	21	62.5	69.1	49.9	68.9	68.6	67.6	66.8	64.1	60.7	52.8	51.7	50.2	62.5	5.0	67.5
Night	22	61.6	69.1	45.1	68.9	68.6	67.7	66.9	63.1	57.9	47.9	46.5	45.3	61.6	10.0	71.6
	23	61.5	69.5	44.2	69.2	68.7	67.6	66.8	62.5	57.8	48.9	46.2	44.5	61.5	10.0	71.5

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	60.6	68.1	47.6	67.8	67.4	65.9	64.9	61.7	58.5	51.3	49.6	48.0
	Max	64.9	73.7	54.0	73.2	72.7	70.4	69.3	66.4	63.7	57.2	55.6	54.2
Energy Average		63.3	Average:		70.2	69.7	68.3	67.2	64.3	61.2	53.7	52.1	50.6
Night	Min	54.5	64.0	33.9	63.8	63.5	62.2	60.7	54.2	44.9	35.3	34.4	34.0
	Max	64.8	72.2	53.1	72.0	71.6	70.4	69.3	66.0	62.5	55.7	54.5	53.4
Energy Average		60.5	Average:		67.6	67.3	66.1	65.0	60.0	53.8	44.8	43.5	42.4

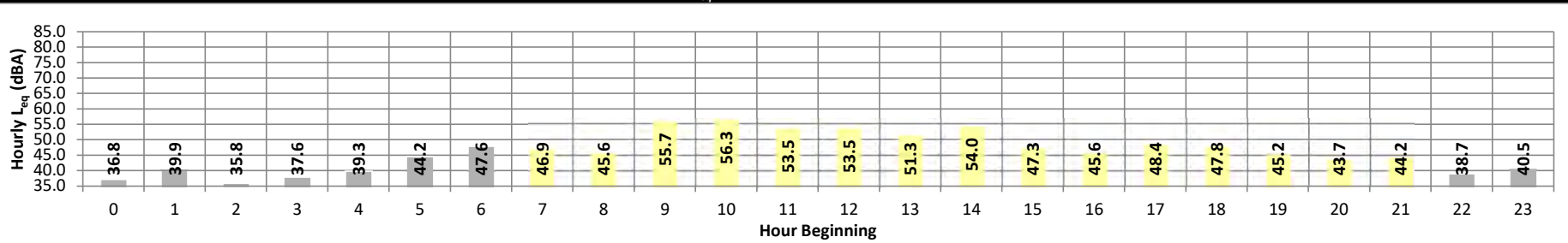
24-Hour CNEL	Leq (dBA) Daytime (7am-10pm)	Leq (dBA) Nighttime (10pm-7am)
67.9	63.3	60.5

24-Hour Noise Level Measurement Summary

Date: Friday, December 1, 2023 *Location:* L3 - Located southeast of the site near the residence at 69711 *Meter:* Piccolo II *JN:* 15631

Project: Yonder *Source:* Shoshone Valley Road *Analyst:* B. Maddux

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	36.8	41.8	32.6	41.3	41.0	40.2	39.6	37.9	36.1	33.7	33.2	32.7	36.8	10.0	46.8
	1	39.9	46.9	32.7	46.5	46.2	45.6	44.9	40.3	37.3	33.9	33.4	32.8	39.9	10.0	49.9
	2	35.8	40.8	31.4	40.2	39.7	39.0	38.6	36.9	35.0	32.4	31.8	31.5	35.8	10.0	45.8
	3	37.6	42.3	33.1	42.0	41.6	40.7	40.3	38.7	37.0	34.3	33.7	33.2	37.6	10.0	47.6
	4	39.3	43.3	35.0	42.9	42.6	42.1	41.8	40.4	38.8	36.1	35.7	35.2	39.3	10.0	49.3
	5	44.2	48.3	40.1	48.0	47.7	47.0	46.6	45.2	43.7	41.4	40.9	40.3	44.2	10.0	54.2
	6	47.6	52.9	43.8	52.5	52.0	50.9	50.1	48.3	46.9	44.8	44.5	44.0	47.6	10.0	57.6
Day	7	46.9	53.6	43.5	53.1	52.4	50.5	49.0	47.1	46.0	44.5	44.1	43.7	46.9	0.0	46.9
	8	45.6	55.0	40.0	53.8	53.1	49.9	48.5	45.8	43.9	41.1	40.6	40.2	45.6	0.0	45.6
	9	55.7	65.1	44.0	63.8	62.7	61.4	60.3	56.5	52.8	46.5	45.5	44.4	55.7	0.0	55.7
	10	56.3	65.8	44.5	65.0	64.1	62.2	61.0	57.0	52.6	47.1	46.1	44.9	56.3	0.0	56.3
	11	53.5	63.0	42.7	61.9	61.1	59.2	57.9	54.1	50.7	44.7	43.8	43.0	53.5	0.0	53.5
	12	53.5	62.8	42.6	61.9	61.0	59.3	57.9	54.2	50.5	45.2	44.3	43.0	53.5	0.0	53.5
	13	51.3	59.9	41.9	59.1	58.4	56.7	55.4	52.0	48.8	44.0	43.2	42.2	51.3	0.0	51.3
	14	54.0	62.9	43.2	62.2	61.4	59.7	58.7	54.6	51.0	45.7	44.7	43.6	54.0	0.0	54.0
	15	47.3	54.9	41.1	54.2	53.5	52.1	50.9	48.0	45.4	42.4	41.9	41.3	47.3	0.0	47.3
	16	45.6	51.8	41.5	51.1	50.4	48.7	48.0	46.2	44.8	42.5	42.1	41.7	45.6	0.0	45.6
	17	48.4	56.2	43.4	55.6	55.0	53.1	51.9	48.6	46.6	44.5	44.1	43.6	48.4	0.0	48.4
	18	47.8	55.4	42.7	54.9	54.2	52.6	51.1	48.1	46.1	43.8	43.3	42.8	47.8	0.0	47.8
	19	45.2	50.3	41.4	50.0	49.7	48.4	47.5	45.8	44.7	42.5	42.0	41.6	45.2	5.0	50.2
	20	43.7	47.4	40.7	47.1	46.7	46.1	45.7	44.5	43.3	41.5	41.2	40.8	43.7	5.0	48.7
	21	44.2	48.6	40.8	48.3	47.9	47.1	46.7	45.1	43.6	41.7	41.3	40.9	44.2	5.0	49.2
Night	22	38.7	41.8	35.8	41.6	41.4	40.9	40.6	39.5	38.4	36.7	36.3	35.9	38.7	10.0	48.7
	23	40.5	45.5	35.9	45.1	44.6	43.7	43.2	41.6	39.8	36.9	36.5	36.1	40.5	10.0	50.5

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	43.7	47.4	40.0	47.1	46.7	46.1	45.7	44.5	43.3	41.1	40.6	40.2
	Max	56.3	65.8	44.5	65.0	64.1	62.2	61.0	57.0	52.8	47.1	46.1	44.9
Energy Average		51.3	Average:		56.1	55.4	53.8	52.7	49.8	47.4	43.8	43.2	42.5
Night	Min	35.8	40.8	31.4	40.2	39.7	39.0	38.6	36.9	35.0	32.4	31.8	31.5
	Max	47.6	52.9	43.8	52.5	52.0	50.9	50.1	48.3	46.9	44.8	44.5	44.0
Energy Average		41.8	Average:		44.5	44.1	43.4	42.8	41.0	39.2	36.7	36.2	35.8

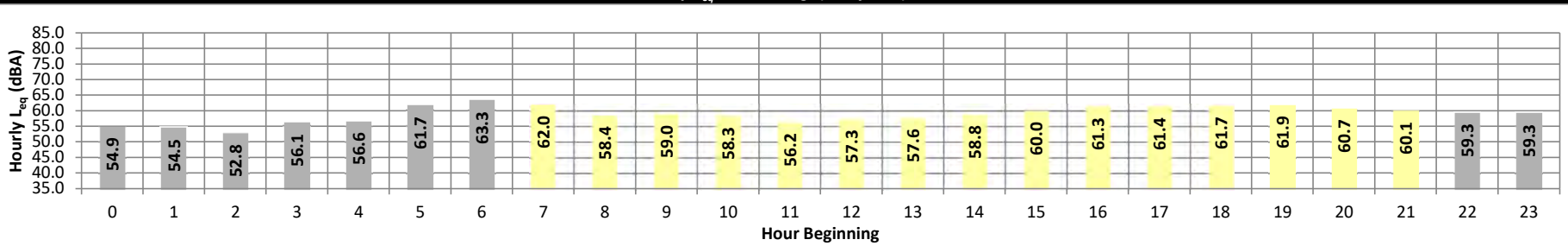
24-Hour CNEL	Leq (dBA) Daytime (7am-10pm)	Leq (dBA) Nighttime (10pm-7am)
51.7	**51.3**	**41.8**

24-Hour Noise Level Measurement Summary

Date: Friday, December 1, 2023 *Location:* L4 - Located northeast of the site near the residence at 6202 *Meter:* Piccolo II *JN:* 15631

Project: Yonder *Source:* Twentynine Palms Highway *Analyst:* B. Maddux

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	54.9	62.3	39.6	62.0	61.6	60.6	59.9	56.2	52.0	41.9	41.0	39.9	54.9	10.0	64.9
	1	54.5	62.1	39.7	61.8	61.5	60.5	59.5	55.6	51.2	43.3	41.3	39.9	54.5	10.0	64.5
	2	52.8	60.8	37.1	60.5	60.0	58.9	58.1	54.1	48.4	39.1	38.4	37.4	52.8	10.0	62.8
	3	56.1	63.5	42.7	63.3	63.0	61.8	60.9	57.4	52.9	45.3	44.1	42.9	56.1	10.0	66.1
	4	56.6	64.4	44.4	64.1	63.8	62.4	61.3	57.8	53.8	47.0	45.6	44.6	56.6	10.0	66.6
	5	61.7	70.4	51.2	70.0	69.6	67.5	65.8	62.1	59.3	53.3	52.1	51.3	61.7	10.0	71.7
	6	63.3	69.2	56.8	69.0	68.7	67.7	66.7	64.3	62.1	58.5	57.7	57.0	63.3	10.0	73.3
Day	7	62.0	69.0	54.4	68.7	68.3	66.8	65.7	62.7	60.5	56.1	55.4	54.6	62.0	0.0	62.0
	8	58.4	65.0	49.2	64.8	64.5	63.4	62.4	59.6	56.8	51.2	50.1	49.3	58.4	0.0	58.4
	9	59.0	66.6	50.8	66.1	65.7	63.9	62.6	59.7	57.4	52.9	51.9	51.0	59.0	0.0	59.0
	10	58.3	64.8	51.1	64.5	64.1	63.1	62.1	59.1	56.9	53.1	52.3	51.4	58.3	0.0	58.3
	11	56.2	63.1	48.1	62.8	62.3	61.0	59.9	57.1	54.9	50.4	49.4	48.4	56.2	0.0	56.2
	12	57.3	63.4	50.3	63.1	62.6	61.4	60.8	58.3	56.3	52.5	51.6	50.5	57.3	0.0	57.3
	13	57.6	63.8	49.7	63.6	63.3	62.4	61.5	58.6	56.3	51.8	50.9	49.9	57.6	0.0	57.6
	14	58.8	65.2	51.8	64.9	64.6	63.4	62.2	59.5	57.5	53.7	52.9	52.1	58.8	0.0	58.8
	15	60.0	66.8	52.4	66.6	66.2	64.7	63.6	60.8	58.6	54.3	53.4	52.6	60.0	0.0	60.0
	16	61.3	67.4	55.2	67.1	66.8	65.6	64.5	62.0	60.4	56.9	56.1	55.4	61.3	0.0	61.3
	17	61.4	66.7	54.7	66.5	66.2	65.3	64.6	62.5	60.6	56.6	55.8	54.9	61.4	0.0	61.4
	18	61.7	69.4	53.8	69.0	68.6	66.9	65.4	62.2	60.0	55.7	54.8	54.0	61.7	0.0	61.7
	19	61.9	69.4	54.8	69.2	68.7	67.2	65.6	62.4	60.3	56.4	55.6	54.9	61.9	5.0	66.9
	20	60.7	67.7	53.8	67.5	67.2	65.7	64.4	61.4	59.3	55.7	54.8	54.0	60.7	5.0	65.7
	21	60.1	65.5	51.9	65.3	65.1	64.3	63.6	61.4	58.9	53.8	52.8	52.0	60.1	5.0	65.1
Night	22	59.3	65.7	49.6	65.5	65.1	64.1	63.4	60.7	57.7	51.8	50.7	49.8	59.3	10.0	69.3
	23	59.3	68.0	46.5	67.5	67.0	65.3	64.1	59.8	56.6	49.2	47.8	46.8	59.3	10.0	69.3

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	56.2	63.1	48.1	62.8	62.3	61.0	59.9	57.1	54.9	50.4	49.4	48.4
	Max	62.0	69.4	55.2	69.2	68.7	67.2	65.7	62.7	60.6	56.9	56.1	55.4
Energy Average		60.0	Average:		66.0	65.6	64.3	63.3	60.5	58.3	54.1	53.2	52.3
Night	Min	52.8	60.8	37.1	60.5	60.0	58.9	58.1	54.1	48.4	39.1	38.4	37.4
	Max	63.3	70.4	56.8	70.0	69.6	67.7	66.7	64.3	62.1	58.5	57.7	57.0
Energy Average		58.9	Average:		64.8	64.5	63.2	62.2	58.7	54.9	47.7	46.5	45.5

24-Hour CNEL	Leq (dBA) Daytime (7am-10pm)	Leq (dBA) Nighttime (10pm-7am)
65.9	**60.0**	**58.9**

APPENDIX 7.1:

ON-SITE TRAFFIC NOISE MODELING

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - v10/31/19

Scenario: First Floor With Wall
Road Name: SR-62
Lot No: Nearest Building

Project Name: Yonder
Job Number: 15631
Analyst: B. Mddux

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	30,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,000 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	46 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	500.0 feet
Centerline Dist. to Observer:	593.0 feet
Barrier Distance to Observer:	93.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Barrier Elevation:	0.0 feet
Road Grade:	1.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	89.28%
Medium Trucks:	84.8%	4.9%	10.3%	6.42%
Heavy Trucks:	86.5%	2.7%	10.8%	4.30%

Noise Source Elevations (in feet)

Autos:	0.00		
Medium Trucks:	2.97		
Heavy Trucks:	8.01	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	569.558
Medium Trucks:	569.539
Heavy Trucks:	569.544

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	72.73	1.57	-15.95	-1.20	*-0.11*	0.000	0.000
Medium Trucks:	79.85	-9.86	-15.95	-1.20	*-0.14*	0.000	0.000
Heavy Trucks:	83.81	-11.60	-15.95	-1.20	*-0.19*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	57.1	55.2	53.5	47.4	56.0	56.7
Medium Trucks:	52.8	51.3	45.0	43.4	51.9	52.1
Heavy Trucks:	55.1	53.6	44.6	45.9	54.2	54.3
Vehicle Noise:	60.1	58.5	54.5	50.6	59.1	59.5

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	57.1	55.2	53.5	47.4	56.0	56.7
Medium Trucks:	52.8	51.3	45.0	43.4	51.9	52.1
Heavy Trucks:	55.1	53.6	44.6	45.9	54.2	54.3
Vehicle Noise:	60.1	58.5	54.5	50.6	59.1	59.5

APPENDIX 10.1:

SAMPLE AIR CONDITIONER MANUFACTURERS SPECIFICATION SHEETS

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Product Data

Fig. 1 —Sizes 09K - 36K

NOTE: Images are for illustration purposes **only**. Actual models may differ slightly.

TABLE OF CONTENTS

INDUSTRY LEADING FEATURES / BENEFITS

A PERFECT BALANCE BETWEEN BUDGET LIMITS, ENERGY SAVINGS AND COMFORT.

The 38MARB series ductless systems are a matched combination of an outdoor condensing unit and an indoor fan coil unit connected only by refrigerant tubing and wires.

The ductless system permits creative solutions to design problems such as:

- Add-ons to current space (an office or family room addition)
- Special space requirements
- When changes in the load cannot be handled by the existing system
- When adding air conditioning to spaces that are heated by hydronic or electric heat and have no ductwork
- Historical renovations or any application where preserving the look of the original structure is essential.

The ideal compliment to your ducted system when it is impractical or prohibitively expensive to use ductwork.

The compact indoor fan coil units take up very little space in the room and do not obstruct windows. The fan coils are attractively styled to blend with most room decors. Advanced system components incorporate innovative technology to provide reliable cooling performance at low sound levels.

Inverter Technology

The inverter driven compressor is designed to run at various input power frequencies (Hz) which controls the compressor's motor speed.

Even Temperature – The control package, including the inverter, monitors the outdoor and indoor temperatures as they relate to the selected indoor set point and adjusts the compressor speed to match the load and keep the system operating continuously rather than cycling and creating temperature swings. This translates to higher comfort levels for the occupants.

Rapid Pull Down/Warm-Up – Comfort is increased by the inverter system's ability to ramp up the compressor speed enabling the system to reach the user selected room temperature set point quicker.

Humidity Control – Running the system for longer periods and continuously varying the compressor speed enhances the humidity control.

Individual Room Comfort

Maximum comfort is provided because each space can be controlled individually based on the usage pattern.

Low Sound Levels

When noise is a concern, ductless systems are the answer. The indoor units are whisper quiet. There are no compressors indoors, either in the conditioned space or directly over it, and there is none of the noise usually generated by air being forced through the ductwork.

When sound ordinances and proximity to neighbors demand quiet operation, the **38MARB** unit is the right choice. With the inverter technology, these units run at lower speeds most of the time resulting in reduced sound levels.

Inverter Technology – Enhanced Economical Operation

Ductless systems are inherently economical to operate. Individual rooms are heated or cooled only when required, and since the air is delivered directly to the space, there is no need to use additional energy to move the air in the ductwork. This economical operation is enhanced further when the inverter system output matches the load resulting in a more efficient system.

Easy-To-Use Controls

The systems have microprocessor-based controls to provide the ultimate in comfort and efficiency. The user friendly wired and wireless remote controls provide the interface between the user and the unit.

Secure Operation

If security is an issue, outdoor and indoor units are connected only by refrigerant piping and wiring to prevent intruders from crawling through ductwork or wall openings. In addition, since the **38MARB** can be installed close to an outside wall, coils are protected from vandals and severe weather.

Fast Installation

This compact ductless system is simple to install. Only wires and piping need to run between the indoor and outdoor units. These units are fast and easy to install ensuring minimal disruption to customers in homes or the workplace. This makes the **38MARB** systems the equipment of choice for retrofit applications.

Simple Servicing and Maintenance

Removing the top panel of the outdoor unit provides immediate access to the control compartment, providing the service technician access to the diagnostic LEDs to facilitate the troubleshooting process. In addition, the draw-thru design of the outdoor unit means that dirt accumulates on the outside surface of the coil. Coils can be cleaned quickly from the inside using a pressure hose and detergent.

On the indoor units, service and maintenance expense is reduced due to the permanent easy to clean filters. Also, error codes are displayed on the front panel to alert the user to certain system malfunctions.

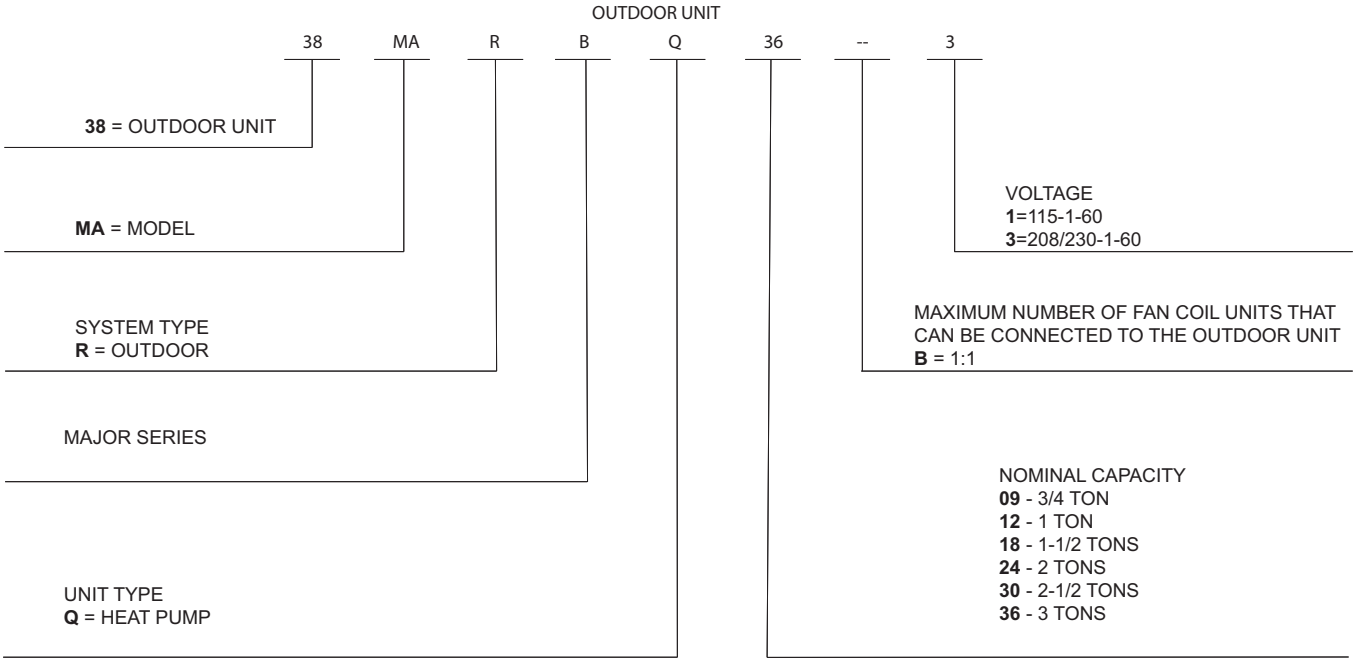
Built-in Reliability

Ductless system indoor and outdoor units are designed to provide years of trouble-free operation. Both the indoor and outdoor units are well protected. Whenever the microprocessor detects abnormal conditions, the unit stops and an error code appears.
Inverter systems provide additional reliability due to the soft start. This refers to the ability of the inverter to start the compressor motor using reduced voltage and reduced current. This feature is beneficial from an electrical standpoint (eliminates current spikes) as well as an overall reliability standpoint due to reduced stress on all associated system components.

Agency Listings

All systems are listed with AHRI (Air conditioning, Heating, and Refrigeration Institute) and are ETL certified per UL 60335-2-40 standard.

MODEL NUMBER NOMENCLATURE



AHRI CERTIFIED www.ahridirectory.org

Use of the AHRI Certified TM Mark indicates a manufacturer's participation in the program For verification of certification for individual products, go to www.ahridirectory.org.

INTERTEK ETL LISTED C US

STANDARD FEATURES AND ACCESSORIES

Ease Of Installation	
Low Voltage Controls	S
Comfort Features	
Microprocessor Controls	S
Auto Restart Function	S
Auto Changeover	S
Energy Saving Features	
Inverter Driven Compressor	S
46° F Heating Mode (Heating Setback)	S
Safety And Reliability	
3 Minute Time Delay For Compressor	S
High Compressor Discharge Temperature	S
Low Voltage Protection	S
Compressor Overload Protection	S
Compressor Over Current Protection	S
IPM Module Protection	S
Condenser High Temp Protection in Cooling Mode	S
Aluminum Hydrophilic pre-coated fins	S
Ease Of Service And Maintenance	
Diagnostics	S
Liquid Line Pressure Taps	S
Application Flexibility	
Crankcase Heater	S
Base pan Heater	S

Legend

S - Standard
A - Accessory

Accessories

Outdoor Unit Model Number	Base Pan Base Rubber Plugs RCD Part No.	Quantity per Unit
38MARBQ12AA1 38MARBQ09AA3 38MARBQ12AA3	12600801A00077	13
38MARBQ18AA3	12600801A00077	25
38MARBQ24AA3 38MARBQ30AA3 38MARBQ36AA3	12600801A00117	5

NOTE: The base pan is built in with multiple holes for proper draining during the defrost process. For applications where it is required to seal these holes, and re-direct the condensate drain, rubber plugs are available through RCD.

Outdoor Units

Crankcase Unit

The crankcase heater is standard on all unit sizes. Heater clamps must be placed around the compressor oil stump.

Base pan Heater

The base pan heater is standard on all unit sizes.

DIMENSIONS

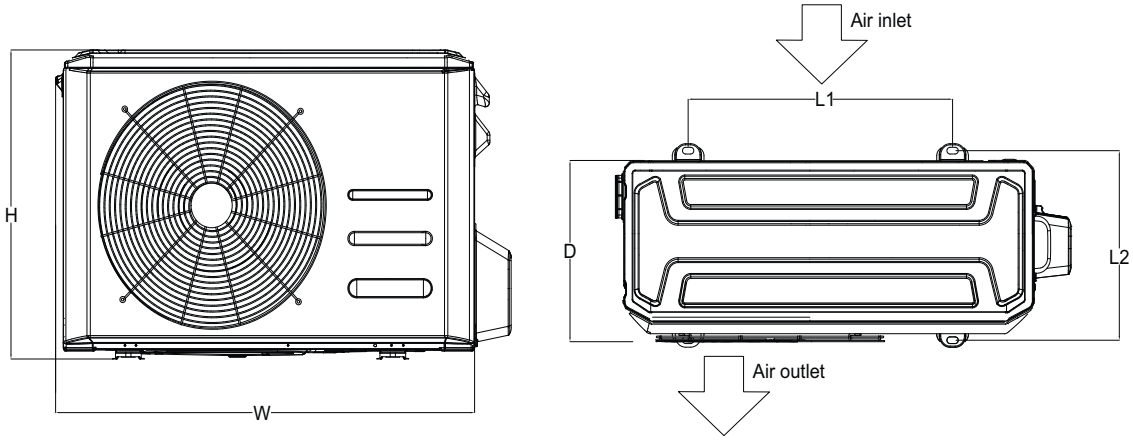


Fig. 2 — Outdoor Unit

UNIT SIZES		12K	9K	12K	18K	24K	30K	36K
VOLTAGES		115V	208/230V	208/230V	208/230V	208/230V	208/230V	208/230V
HEIGHT (H)	IN (MM)	21.85 (555)	21.81 (554)	21.81 (554)	26.50 (673)	31.89 (810)	31.89 (810)	31.89 (810)
WIDTH (W)	IN (MM)	30.12 (765)	31.69 (805)	31.65 (805)	35.04 (890)	37.24 (946)	37.24 (946)	37.24 (946)
DEPTH (D)	IN (MM)	11.93 (303))	12.99 (330)	12.99 (330)	13.46 (342)	16.14 (410)	16.14 (410)	16.14 (410)
L1	IN (MM)	17.81 (452)	20.10 (511)	20.10 (511)	26.10 (663)	26.50 (673)	26.50 (673)	26.50 (673)
L2	IN (MM)	11.25 (286)	12.50 (317)	12.50 (317)	13.70 (347)	15.85 (403)	15.85 (403)	15.85 (403)
OPERATING WEIGHT	LBS (KG)	66.80 (30.30)	74.10(33.60)	73.60 (33.40)	101.0 (45.80)	134.50 (61)	141.80 (64.3)	150.10 (68.10)

DIMENSIONS (CONT)

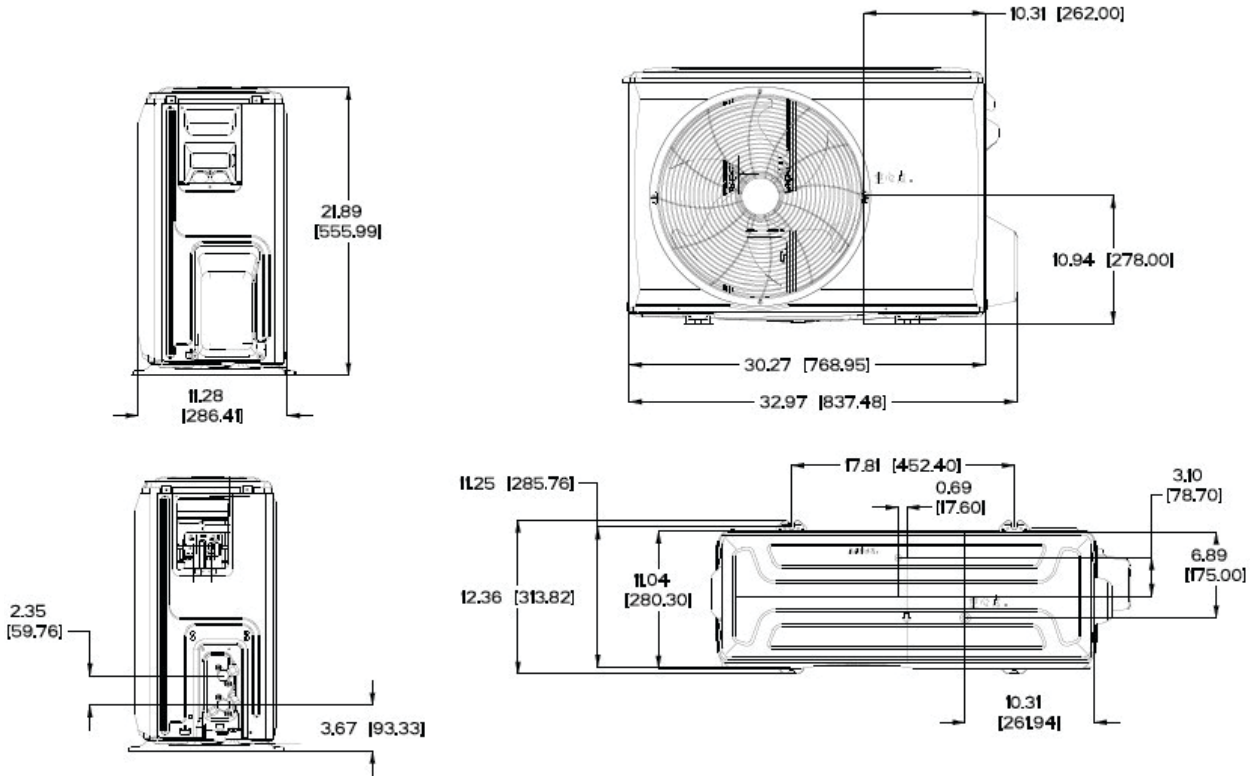


Fig. 3 — Dimension Size 12K (115V)

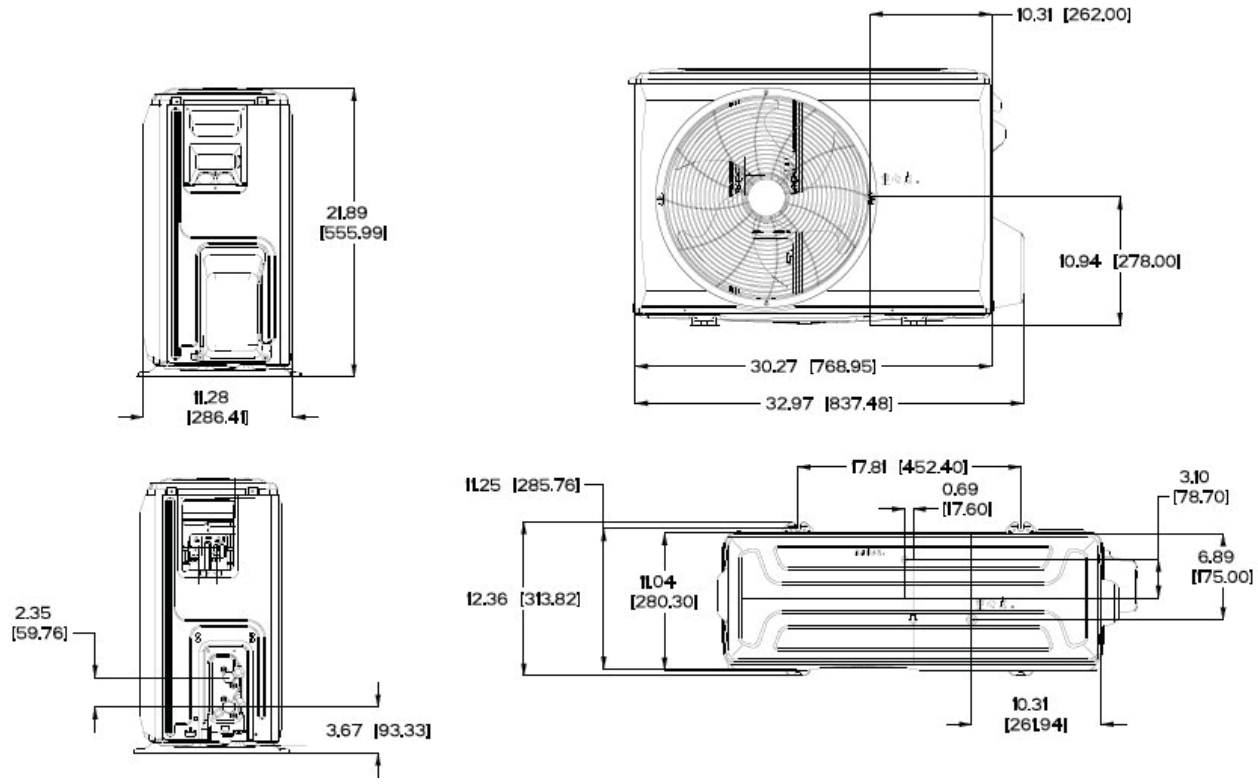


Fig. 4 — Dimension Sizes 09K-12K

DIMENSIONS (CONT)

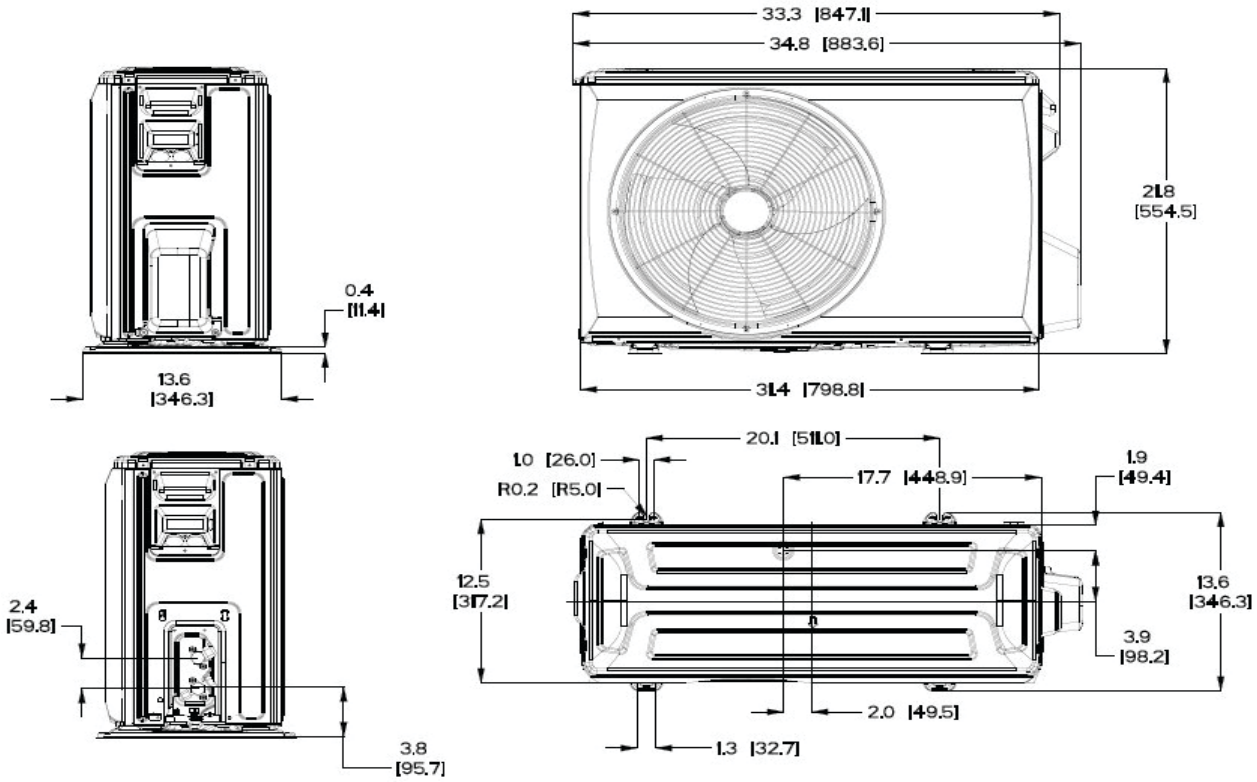


Fig. 5 — Dimension Size 18K

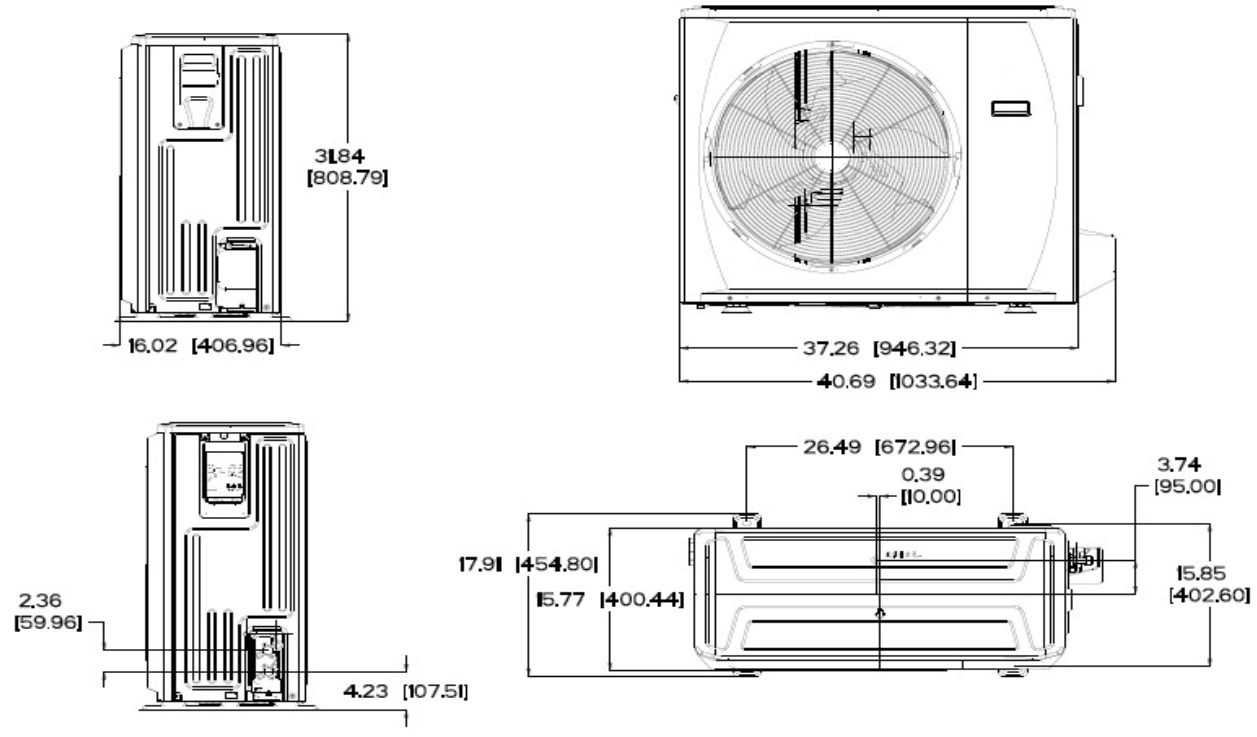


Fig. 6 — Dimension Sizes 24K, 30K, and 36K

CLEARANCES

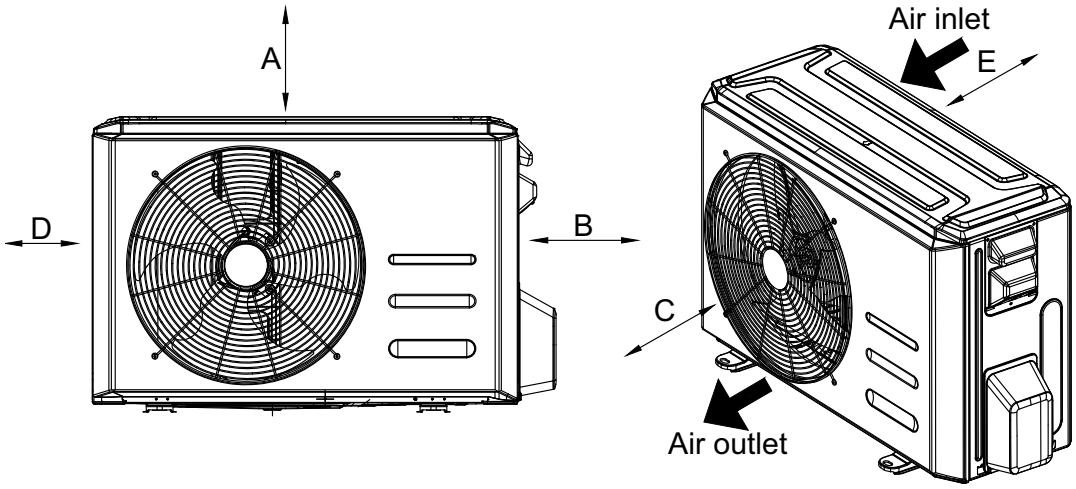


Fig. 7 — Clearances

UNIT	MINIMUM VALUE IN. (MM)
A	24 (610)
B	24 (610)
C	24 (610)
D	4 (101)
E	4 (101)

NOTE: The outdoor unit must be mounted at least 2in (50mm) above the maximum anticipated snow depth.

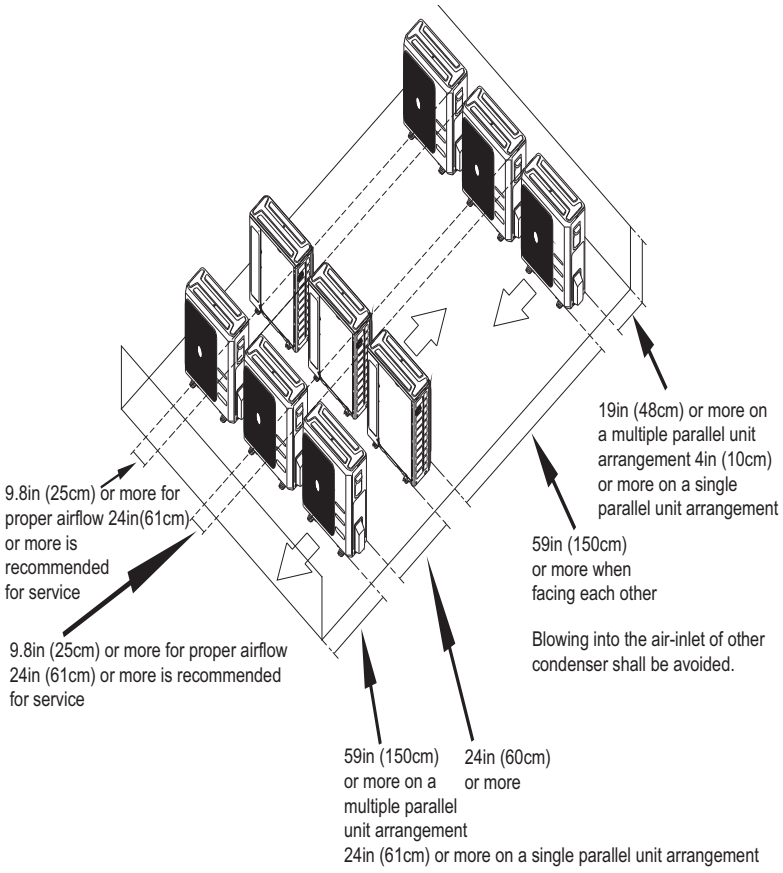


Fig. 8 — Clearances for multiple units

SPECIFICATIONS

System	Size		12	9	12	18	24	30	36
	Outdoor Model		**38MARBQ12AA1**	**38MARBQ09AA3**	**38MARBQ12AA3**	**38MARBQ18AA3**	**38MARBQ24AA3**	**38MARBQ30AA3**	**38MARBQ36AA3**
Electrical	Voltage, Phase, Cycle	V/Ph/Hz	115-1-60	208/230-1-60	208/230-1-60	208/230-1-60	208/230-1-60	208/230-1-60	208/230-1-60
	MCA	A.	19	15	15	16	25	23	28
	MOCP - Fuse Rating	A.	25	15	15	25	35	30	35
Operating Range	Cooling Outdoor DB Min - Max	°F(°C)	-22~130 (30-55)	-22~130 (30-55)	-22~130 (30-55)	-22~130 (30-55)	-22~130 (30-55)	-22~130 (30-55)	-22~130 (30-55)
	Heating Outdoor DB Min - Max	°F(°C)	-22~86 (-30~30)	-22~86 (-30~30)	-22~86 (-30~30)	-22~86 (-30~30)	-22~86 (-30~30)	-22~86 (-30~30)	-22~86 (-30~30)
Piping	Total Piping Length	ft (m)	82 (25)	82 (25)	82 (25)	98 (30)	164 (50)	164 (50)	213 (65)
	Piping Lift*	ft (m)	32 (10)	32 (10)	32 (10)	65 (20)	82 (25)	82 (25)	98 (30)
	Pipe Connection Size - Liquid	in (mm)	1/4 (6.35)	1/4 (6.35)	1/4 (6.35)	1/4 (6.35)	3/8 (9.52)	3/8 (9.52)	3/8 (9.52)
	Pipe Connection Size - Suction	in (mm)	1/2 (12.7)	3/8 (9.52)	1/2 (12.7)	1/2 (12.7)	5/8 (16)	5/8 (16)	5/8 (16)
Refrigerant	Refrigerant Type		R410A	R410A	R410A	R410A	R410A	R410A	R410A
	Charge	lbs (kg)	2.47 (1.12)	2.6 (1.18)	2.6 (1.18)	4.08 (1.85)	5.73 (2.6)	6.06 (2.75)	7.50 (3.40)
	Metering Device		EEV	EEV	EEV	EEV	EEV	EEV	EEV
Outdoor Coil	Face Area	Sq. Ft.	7.89	4.67	4.67	5.90	8.16	13.08	23.96
	No. Rows		2	2	2	2	2	3	3
	Fins per inch		21	20	20	20	20	18	18
	Circuits		4	4	4	6	4	6	6
Compressor	Type		Rotary Inverter	Rotary Inverter	Rotary Inverter	Rotary Inverter	Rotary Inverter	Rotary Inverter	Rotary Inverter
	Model		KSK103D33UEZ3	KTN110D42UFZ	KTN110D42UFZ	KTM240D43UKT	KTM240D43UKT	KTF250D22UMT	KTF250D22UMT
	Oil Type		VG74	VG74	VG74	VG74	VG74	VG74	VG74
	Oil Charge	Fl. Oz.	10.5	11.8	11.8	21.0	21.0	22.7	22.7
	Rated Current	RLA	11.5	6.0	8.5	14.3	14.8	15.0	18.0
Outdoor	Unit Width	in (mm)	30.12 (765)	31.69 (805)	31.69 (805)	35.04 (890)	37.24 (946)	37.24 (946)	37.24 (946)
	Unit Height	in (mm)	21.85 (555)	21.81 (554)	21.81 (554)	26.50 (673)	31.89 (810)	31.89 (810)	31.89 (810)
	Unit Depth	in (mm)	11.93 (303)	12.99 (330)	12.99 (330)	13.46 (342)	16.14 (410)	16.14 (410)	16.14 (410)
	Net Weight	lbs (kg)	66.80 (30.3)	74.07 (33.6)	73.63 (33.4)	100.97 (45.8)	134.48 (61)	141.76 (64.3)	150.13 (68.1)
	Airflow	CFM	794	1,324	1,324	1,765	2,235	2,235	2,235
	Sound Pressure	dB(A)	54.0	54.5	56.0	59.0	62.0	61.5	61.5

* Condensing unit above or below the indoor unit

APPENDIX 10.2:

CADNAA OPERATIONAL NOISE MODEL INPUTS

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15631 - Yonder 29 Palms

CadnaA Noise Prediction Model: 15631-02_Operation.cna
Date: 09.01.24
Analyst: B. Maddux

Calculation Configuration

Configuration	
Parameter	**Value**
General	
Max. Error (dB)	**0.00**
Max. Search Radius (#(Unit,LEN))	**2000.01**
Min. Dist Src to Rcvr	**0.00**
Partition	
Raster Factor	**0.50**
Max. Length of Section (#(Unit,LEN))	**999.99**
Min. Length of Section (#(Unit,LEN))	**1.01**
Min. Length of Section (%)	**0.00**
Proj. Line Sources	**On**
Proj. Area Sources	**On**
Ref. Time	
Daytime Penalty (dB)	**0.00**
Recr. Time Penalty (dB)	**5.00**
Night-time Penalty (dB)	**10.00**
DTM	
Standard Height (m)	**0.00**
Model of Terrain	**Triangulation**
Reflection	
max. Order of Reflection	**2**
Search Radius Src	**100.00**
Search Radius Rcvr	**100.00**
Max. Distance Source - Rcvr	**1000.00 1000.00**
Min. Distance Rvcr - Reflector	**1.00 1.00**
Min. Distance Source - Reflector	**0.10**
Industrial (ISO 9613)	
Lateral Diffraction	**some Obj**
Obst. within Area Src do not shield	**On**
Screening	**Incl. Ground Att. over Barrier**
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	**3.0 20.0 0.0**
Temperature (#(Unit,TEMP))	**10**
rel. Humidity (%)	**70**
Ground Absorption G	**0.50**
Wind Speed for Dir. (#(Unit,SPEED))	**3.0**
Roads (TNM)	
Railways (FTA/FRA)	
Aircraft (???)	
Strictly acc. to AzB	

Receiver Noise Levels

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates			
			Day	Night	CNEL	Day	Night	CNEL	Type	Auto	Noise Type			X	Y	Z	
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)	
R1		R1	38.5	32.5	40.1	0.0	0.0	0.0		x	Total	5.00	r	6591693.09	2355579.89	5.00	
R2		R2	33.8	27.5	35.2	0.0	0.0	0.0		x	Total	5.00	r	6591650.99	2356751.37	5.00	
R3		R3	33.4	26.5	34.4	0.0	0.0	0.0		x	Total	5.00	r	6593708.28	2357024.81	5.00	
R4		R4	35.3	27.6	35.9	0.0	0.0	0.0		x	Total	5.00	r	6594421.82	2354516.13	5.00	
R5		R5	33.4	25.8	34.0	0.0	0.0	0.0		x	Total	5.00	r	6594460.02	2353859.88	5.00	

Point Source(s)

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night			X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(ft)		(ft)	(ft)	(ft)
AC001		AC001	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592513.63	2355476.72	3.00
AC002		AC002	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592435.51	2355580.88	3.00
AC003		AC003	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592382.12	2355634.27	3.00
AC004		AC004	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592391.24	2355696.77	3.00
AC005		AC005	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592339.16	2355746.25	3.00
AC006		AC006	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592380.82	2355804.84	3.00
AC007		AC007	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592357.38	2355899.89	3.00
AC008		AC008	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592426.39	2355890.78	3.00
AC009		AC009	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592490.20	2355946.77	3.00
AC010		AC010	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592554.00	2355938.96	3.00
AC011		AC011	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592621.71	2355979.32	3.00
AC012		AC012	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592654.26	2355911.61	3.00
AC013		AC013	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592688.11	2355867.34	3.00
AC014		AC014	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592729.78	2355862.13	3.00
AC015		AC015	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592749.31	2355909.01	3.00

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night			X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(ft)		(ft)	(ft)	(ft)
AC016		AC016	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592758.43	2356023.59	3.00
AC017		AC017	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592840.46	2355984.53	3.00
AC018		AC018	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592917.28	2356063.96	3.00
AC019		AC019	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592944.62	2355975.41	3.00
AC020		AC020	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6593027.96	2356018.38	3.00
AC021		AC021	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6593029.26	2355916.82	3.00
AC022		AC022	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6593100.87	2355898.59	3.00
AC023		AC023	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6593072.23	2355826.98	3.00
AC024		AC024	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6593139.94	2355756.66	3.00
AC025		AC025	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6593055.30	2355724.11	3.00
AC026		AC026	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6593008.43	2355642.08	3.00
AC027		AC027	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6593104.78	2355651.20	3.00
AC028		AC028	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592973.27	2355563.96	3.00
AC029		AC029	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6593048.79	2355566.56	3.00
AC030		AC030	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592952.53	2355478.63	3.00
AC031		AC031	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6593000.27	2355460.19	3.00
AC032		AC032	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6593072.97	2355481.89	3.00
AC033		AC033	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6593145.67	2355481.89	3.00
AC034		AC034	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6593227.05	2355505.76	3.00
AC035		AC035	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6593233.56	2355425.46	3.00
AC036		AC036	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6593308.43	2355408.10	3.00
AC037		AC037	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6593284.56	2355340.83	3.00
AC038		AC038	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6593337.73	2355289.83	3.00
AC039		AC039	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6593279.13	2355245.34	3.00
AC040		AC040	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6593320.37	2355185.66	3.00
AC041		AC041	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6593247.67	2355169.39	3.00
AC042		AC042	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6593184.73	2355119.47	3.00
AC043		AC043	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6593219.45	2355059.80	3.00
AC044		AC044	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6593293.24	2355096.69	3.00
AC045		AC045	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6593318.20	2355012.05	3.00
AC046		AC046	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6593424.53	2355007.71	3.00
AC047		AC047	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6593394.15	2354904.63	3.00
AC048		AC048	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6593460.34	2354837.36	3.00
AC049		AC049	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6593368.11	2354800.46	3.00
AC050		AC050	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6593402.83	2354729.93	3.00
AC051		AC051	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6593309.51	2354719.08	3.00
AC052		AC052	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6593300.83	2354637.70	3.00
AC053		AC053	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6593210.77	2354655.07	3.00
AC054		AC054	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6593123.97	2354586.71	3.00
AC055		AC055	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6593090.33	2354662.66	3.00
AC056		AC056	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592987.25	2354655.07	3.00
AC057		AC057	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592997.01	2354737.53	3.00
AC058		AC058	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592962.29	2354784.19	3.00
AC059		AC059	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592937.34	2354834.10	3.00
AC060		AC060	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592875.49	2354838.44	3.00
AC061		AC061	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592868.98	2354780.93	3.00
AC062		AC062	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592860.30	2354718.00	3.00
AC063		AC063	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592846.19	2354660.49	3.00
AC064		AC064	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592799.53	2354555.24	3.00
AC065		AC065	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592902.61	2354566.09	3.00
AC066		AC066	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592784.34	2354455.41	3.00
AC067		AC067	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592702.96	2354497.73	3.00
AC068		AC068	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592612.90	2354436.97	3.00
AC069		AC069	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592567.33	2354511.84	3.00
AC070		AC070	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592484.86	2354499.90	3.00
AC071		AC071	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592459.91	2354574.77	3.00
AC072		AC072	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592460.99	2354655.07	3.00
AC073		AC073	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592452.31	2354735.36	3.00
AC074		AC074	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592468.59	2354869.91	3.00
AC075		AC075	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592503.31	2354936.10	3.00
AC076		AC076	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592530.43	2354984.93	3.00
AC077		AC077	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592519.58	2355033.75	3.00
AC078		AC078	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592659.56	2354663.75	3.00
AC079		AC079	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592615.07	2354696.30	3.00
AC080		AC080	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592583.60	2354742.96	3.00
AC081		AC081	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592610.73	2354812.40	3.00
AC082		AC082	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592709.47	2354701.72	3.00
AC083		AC083	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592725.75	2354737.53	3.00
AC084		AC084	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592719.24	2354789.61	3.00
AC085		AC085	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592760.47	2354888.36	3.00
AC086		AC086	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592707.30	2354921.99	3.00
AC087		AC087	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592623.75	2354927.42	3.00
AC088		AC088	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592659.56	2354995.78	3.00
AC089		AC089	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592692.11	2355082.58	3.00
AC090		AC090	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592790.85	2354956.71	3.00
AC091		AC091	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592801.70	2355020.73	3.00
AC092		AC092	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592885.25	2355040.26	3.00

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night			X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(ft)		(ft)	(ft)	(ft)
AC093		AC093	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592936.25	2354988.18	3.00
AC094		AC094	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592989.42	2354964.31	3.00
AC095		AC095	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6593045.84	2354964.31	3.00
AC096		AC096	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6593068.63	2355037.01	3.00
AC097		AC097	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592983.99	2355057.63	3.00
AC098		AC098	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592953.61	2355181.32	3.00
AC099		AC099	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6593015.46	2355179.15	3.00
AC100		AC100	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6593070.80	2355195.43	3.00
AC101		AC101	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6593109.86	2355241.00	3.00
AC102		AC102	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6593143.50	2355274.64	3.00
AC103		AC103	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6593097.93	2355323.47	3.00
AC104		AC104	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6593030.65	2355338.66	3.00
AC105		AC105	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592985.08	2355268.13	3.00
AC106		AC106	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592938.42	2355321.30	3.00
AC107		AC107	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592870.06	2355339.74	3.00
AC108		AC108	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592836.42	2355383.15	3.00
AC109		AC109	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592819.06	2355454.76	3.00
AC110		AC110	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592625.92	2355459.10	3.00
AC111		AC111	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592571.67	2355493.82	3.00
AC112		AC112	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592646.54	2355580.63	3.00
AC113		AC113	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592594.45	2355601.25	3.00
AC114		AC114	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592559.73	2355665.26	3.00
AC115		AC115	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592531.52	2355709.75	3.00
AC116		AC116	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592522.84	2355765.09	3.00
AC117		AC117	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592544.54	2355807.41	3.00
AC118		AC118	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592593.37	2355797.64	3.00
AC119		AC119	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592616.16	2355755.33	3.00
AC120		AC120	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592641.11	2355697.82	3.00
AC121		AC121	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592655.22	2355640.31	3.00
AC122		AC122	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592769.15	2355688.05	3.00
AC123		AC123	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592789.77	2355747.73	3.00
AC124		AC124	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592837.51	2355795.47	3.00
AC125		AC125	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592938.42	2355770.52	3.00
AC126		AC126	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592912.38	2355722.77	3.00
AC127		AC127	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592876.57	2355678.29	3.00
AC128		AC128	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592827.74	2355640.31	3.00
AC129		AC129	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592813.64	2355583.88	3.00
AC130		AC130	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592747.45	2355561.10	3.00
AC131		AC131	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592642.20	2355200.86	3.00
AC132		AC132	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592539.12	2355308.28	3.00
AC133		AC133	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592452.31	2354375.12	3.00
AC134		AC134	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592450.14	2354311.10	3.00
AC135		AC135	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592452.31	2354255.76	3.00
AC136		AC136	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592452.31	2354189.57	3.00
AC137		AC137	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6592238.55	2354789.61	3.00
AC138		AC138	69.2	69.2	69.2	Lw	69.2		675.00	0.00	270.00	3.00	a	6593225.75	2354927.63	3.00
OUT1		OUT1	91.5	91.5	91.5	Lw	91.5		900.00	0.00	0.00	5.00	a	6592531.74	2355192.17	5.00
OUT2		OUT2	91.5	91.5	91.5	Lw	91.5		900.00	0.00	0.00	5.00	a	6592715.76	2355225.16	5.00
OUT3		OUT3	91.5	91.5	91.5	Lw	91.5		900.00	0.00	0.00	5.00	a	6592833.82	2355190.44	5.00
OUT4		OUT4	91.5	91.5	91.5	Lw	91.5		900.00	0.00	0.00	5.00	a	6593168.89	2354902.24	5.00
OUT5		OUT5	91.5	91.5	91.5	Lw	91.5		900.00	0.00	0.00	5.00	a	6593163.68	2354844.95	5.00
OUT6		OUT6	91.5	91.5	91.5	Lw	91.5		900.00	0.00	0.00	5.00	a	6592905.00	2355844.95	5.00
TRASH1		TRASH1	88.4	88.4	88.4	Lw	88.4		150.00	0.00	90.00	8.00	a	6592241.81	2354815.44	8.00
MUSIC1		MUSIC1	92.9	92.9	92.9	Lw	92.9		900.00	0.00	0.00	5.00	a	6593208.82	2354851.90	5.00
MUSIC2		MUSIC2	92.9	92.9	92.9	Lw	92.9		900.00	0.00	0.00	5.00	a	6592604.65	2355329.33	5.00
MOVIE1		MOVIE1	96.1	96.1	96.1	Lw	96.1		900.00	0.00	540.00	5.00	a	6592726.09	2355226.53	5.00

Line Source(s)

Name	M.	ID	Result. PWL			Result. PWL'			Lw / Li			Operating Time			Moving Pt. Src				Height
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	Number			Speed	
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	Day	Evening	Night	(mph)	(ft)

Name	ID	Height		Coordinates			
		Begin	End	x	y	z	Ground
		(ft)	(ft)	(ft)	(ft)	(ft)	(ft)

Area Source(s)

Name	M.	ID	Result. PWL			Result. PWL''			Lw / Li			Operating Time			Height	
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	(ft)	
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)		
PARK1		PARK1	79.0	79.0	79.0	47.4	47.4	47.4	Lw	79.0		900.00	0.00	540.00	0.	a
PARK2		PARK2	79.0	79.0	79.0	47.3	47.3	47.3	Lw	79.0		900.00	0.00	540.00	0.	a
PARK3		PARK3	79.0	79.0	79.0	47.4	47.4	47.4	Lw	79.0		900.00	0.00	540.00	0.	a

Name	ID	Height				Coordinates			
		Begin		End		x	y	z	Ground
		(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
PARK1	PARK1	0.00	a			6592300.83	2355449.12	0.00	0.00
						6592427.57	2355463.01	0.00	0.00
						6592444.93	2355351.90	0.00	0.00
						6592306.04	2355329.33	0.00	0.00
PARK2	PARK2	0.00	a			6592319.93	2355233.84	0.00	0.00
						6592455.35	2355247.73	0.00	0.00
						6592465.76	2355129.67	0.00	0.00
						6592333.82	2355117.52	0.00	0.00
PARK3	PARK3	0.00	a			6592325.14	2354930.02	0.00	0.00
						6592387.64	2354924.81	0.00	0.00
						6592375.49	2354669.61	0.00	0.00
						6592316.46	2354674.81	0.00	0.00

Barrier(s)

Name	Sel.	M.	ID	Absorption		Z-Ext.	Cantilever		Height		Coordinates			
				left	right		horz.	vert.	Begin	End	x	y	z	Ground
						(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)

Building(s)

Name	Sel.	M.	ID	RB	Residents	Absorption	Height	Coordinates				
							Begin	x	y	z	Ground	
							(ft)	(ft)	(ft)	(ft)	(ft)	

Ground Absorption(s)

Name	Sel.	M.	ID	G	Coordinates	
					x	y
					(ft)	(ft)

Contour(s)

Name	Sel.	M.	ID	OnlyPts	Height		Coordinates		
					Begin	End	x	y	z
					(ft)	(ft)	(ft)	(ft)	(ft)

Vertical Area Source(s)

Name	ID	Height				Coordinates			
		Begin		End		x	y	z	Ground
		(ft)		(ft)		(ft)	(ft)	(ft)	(ft)

Rail

Name	Sel.	M.	ID	Lw'		Train Class	Correct.	Vmax
				Day	Night		Track	
				(dBA)	(dBA)		(dB)	(km(mph)

Sound Level Spectra

Name	ID	Type	Oktave Spectrum (dB)											Source
			Weight.	31.5	63	125	250	500	1000	2000	4000	8000	A	lin	

Roads

Name	Sel.	M.	ID	Lme			Count Data		exact Count Data						Speed Limit		SCS	Surface		Gradient	Mult. Reflection		
				Day	Evening	Night	DTV	Str.class.	M			p (%)			Auto	Truck	Dist.	Dstro	Type		Drefl	Hbuild	Dist.
				(dBA)	(dBA)	(dBA)			Day	Evening	Night	Day	Evening	Night	(mph)	(mph)		(dB)		(%)	(dB)	(ft)	(ft)

RoadsGeo

Name	Height				Coordinates				Dist	LSlope
	Begin		End		x	y	z	Ground	(ft)	(%)
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)		

APPENDIX 11.1:

CADNAA CONSTRUCTION NOISE LEVEL CALCULATIONS

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15631 - Yonder 29 Palms

CadnaA Noise Prediction Model: 15631-02_Construction.cna
Date: 09.01.24
Analyst: B. Maddux

Calculation Configuration

Configuration	
Parameter	**Value**
General	
Max. Error (dB)	**0.00**
Max. Search Radius (#(Unit,LEN))	**2000.01**
Min. Dist Src to Rcvr	**0.00**
Partition	
Raster Factor	**0.50**
Max. Length of Section (#(Unit,LEN))	**999.99**
Min. Length of Section (#(Unit,LEN))	**1.01**
Min. Length of Section (%)	**0.00**
Proj. Line Sources	**On**
Proj. Area Sources	**On**
Ref. Time	
Daytime Penalty (dB)	**0.00**
Recr. Time Penalty (dB)	**5.00**
Night-time Penalty (dB)	**10.00**
DTM	
Standard Height (m)	**0.00**
Model of Terrain	**Triangulation**
Reflection	
max. Order of Reflection	**2**
Search Radius Src	**100.00**
Search Radius Rcvr	**100.00**
Max. Distance Source - Rcvr	**1000.00 1000.00**
Min. Distance Rvcr - Reflector	**1.00 1.00**
Min. Distance Source - Reflector	**0.10**
Industrial (ISO 9613)	
Lateral Diffraction	**some Obj**
Obst. within Area Src do not shield	**On**
Screening	**Incl. Ground Att. over Barrier**
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	**3.0 20.0 0.0**
Temperature (#(Unit,TEMP))	**10**
rel. Humidity (%)	**70**
Ground Absorption G	**0.50**
Wind Speed for Dir. (#(Unit,SPEED))	**3.0**
Roads (TNM)	
Railways (FTA/FRA)	
Aircraft (???)	
Strictly acc. to AzB	

Receiver Noise Levels

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
			Day	Night	CNEL	Day	Night	CNEL	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)
R1		R1	63.3	-41.4	60.3	0.0	0.0	0.0		x	Total	5.00	r	6591693.09	2355579.89	5.00
R2		R2	56.6	-48.2	53.6	0.0	0.0	0.0		x	Total	5.00	r	6591650.99	2356751.37	5.00
R3		R3	55.8	-49.0	52.8	0.0	0.0	0.0		x	Total	5.00	r	6593708.28	2357024.81	5.00
R4		R4	59.2	-45.6	56.2	0.0	0.0	0.0		x	Total	5.00	r	6594421.82	2354516.13	5.00
R5		R5	54.9	-49.9	51.8	0.0	0.0	0.0		x	Total	5.00	r	6594460.02	2353859.88	5.00

Point Source(s)

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night			X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(ft)		(ft)	(ft)	(ft)

Line Source(s)

Name	M.	ID	Result. PWL			Result. PWL'			Lw / Li			Operating Time			Moving Pt. Src				Height
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	Number			Speed	
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	Day	Evening	Night	(mph)	(ft)

Name	ID	Height		Coordinates			
		Begin	End	x	y	z	Ground
		(ft)	(ft)	(ft)	(ft)	(ft)	(ft)

Area Source(s)

Name	M.	ID	Result. PWL			Result. PWL''			Lw / Li			Operating Time			Height	
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	(ft)	
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)		
Construction Area		CA01	121.4	16.6	16.6	63.5	-41.2	-41.2	PWL-Pt	116.6					8	a

Name	ID	Height			Coordinates			
		Begin		End	x	y	z	Ground
		(ft)		(ft)	(ft)	(ft)	(ft)	(ft)
Construction Area	CA01	8.00	a		6591711.64	2356612.26	8.00	0.00
					6593902.62	2356606.58	8.00	0.00
					6593901.66	2356301.56	8.00	0.00
					6594187.38	2356300.82	8.00	0.00
					6594315.52	2356296.89	8.00	0.00
					6594309.04	2354224.42	8.00	0.00
					6594135.87	2354228.69	8.00	0.00
					6593915.85	2354229.48	8.00	0.00
					6593915.31	2354049.47	8.00	0.00
					6593915.19	2354009.47	8.00	0.00
					6591704.86	2354015.65	8.00	0.00
					6591701.44	2354057.46	8.00	0.00
					6591702.69	2354369.21	8.00	0.00
					6591707.64	2354709.38	8.00	0.00
					6591705.42	2355053.25	8.00	0.00
					6591706.66	2355365.23	8.00	0.00
					6591706.90	2355425.24	8.00	0.00
					6591708.15	2355737.30	8.00	0.00
					6591709.39	2356047.21	8.00	0.00
					6591709.63	2356107.22	8.00	0.00
					6591710.91	2356427.24	8.00	0.00
					6591711.51	2356577.25	8.00	0.00

Barrier(s)

Name	Sel.	M.	ID	Absorption		Z-Ext.	Cantilever		Height		Coordinates			
				left	right		horz.	vert.	Begin	End	x	y	z	Ground
						(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)

Building(s)

Name	Sel.	M.	ID	RB	Residents	Absorption	Height	Coordinates				
							Begin	x	y	z	Ground	
							(ft)	(ft)	(ft)	(ft)	(ft)	

Ground Absorption(s)

Name	Sel.	M.	ID	G	Coordinates	
					x	y
					(ft)	(ft)

Contour(s)

Name	Sel.	M.	ID	OnlyPts	Height		Coordinates		
					Begin	End	x	y	z
					(ft)	(ft)	(ft)	(ft)	(ft)

Vertical Area Source(s)

Name	ID	Height		Coordinates			
		Begin	End	x	y	z	Ground
		(ft)	(ft)	(ft)	(ft)	(ft)	(ft)

Rail

Name	Sel.	M.	ID	Lw'		Train Class	Correct.	Vmax
				Day	Night		Track	
				(dBA)	(dBA)		(dB)	(km(mph)

Sound Level Spectra

Name	ID	Type	Oktave Spectrum (dB)											Source
			Weight.	31.5	63	125	250	500	1000	2000	4000	8000	A	lin	

Roads

Name	Sel.	M.	ID	Lme			Count Data		exact Count Data						Speed Limit		SCS	Surface		Gradient	Mult. Reflection		
				Day	Evening	Night	DTV	Str.class.	M			p (%)			Auto	Truck	Dist.	Dstro	Type		Drefl	Hbuild	Dist.
				(dBA)	(dBA)	(dBA)			Day	Evening	Night	Day	Evening	Night	(mph)	(mph)		(dB)		(%)	(dB)	(ft)	(ft)

RoadsGeo

Name	Height		Coordinates				Dist	LSlope
	Begin	End	x	y	z	Ground	(ft)	(%)
	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)		